

THE IMPACT OF COMBAT DEPLOYMENT EXPERIENCES ON INTIMATE
PARTNER VIOLENCE IN THE AIR FORCE

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DEDICATION

This work is dedicated to my wife, Lisa, and three sons, Grant, Matthew, and Thomas. I would not and could not have done this without your love, support, encouragement, patience, and prayers. Dad is finally done working on his paper.

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Intimate partner violence is a problem in the United States (U.S.) military. Previous research has identified factors that increase a couple's risk for engaging in violence. Most of these factors, such as age, alcohol, and relationship satisfaction are consistent across civilian and military samples. One factor that is unique to military samples is deployment; service members can be exposed to unique traumatic incidents while deployed which are generally unknown to most civilians. Deployments can also increase a service member's risk for developing Post Traumatic Stress Disorder (PTSD), which can increase their risk for intimate partner violence. Previous research on the effect of deployments on intimate partner violence has produced mixed results. The purpose of this study was to analyze if deployment, total length of deployment, combat experiences from deployment, and PTSD symptoms increased risk for Air Force airmen to perpetrate intimate partner violence at a moderate or severe level of violence. Survey data from a representative sample of active duty Air Force airmen ($N = 1,501$) was used to conduct Chi-Square analyses and multinomial logistic regression models for perpetrated violence. Results of the study showed that deployment and combat experiences were not significant predictors of perpetrated violence. PTSD symptoms, in addition to alcohol misuse and relationship satisfaction, were significant predictors of moderate and severe perpetrated violence. In terms of practice and policy implications, the study results underscore the importance of widespread screening for these risk factors as well as the availability of interventions focused on alcohol use and relationship issues among service members.

Future research could determine if PTSD symptoms moderate the relationship between combat experiences and intimate partner violence.

James G. Daley, Ph.D., Chair

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CHAPTER ONE – INTRODUCTION

Prevalence reports indicate that nearly one in five women will be a victim of physical abuse by their male partner in their lifetime (Centers for Disease Control and Prevention [CDC], 2008). Intimate partner violence (IPV) is not limited to women only as one in thirteen men will report suffering from IPV in their lifetime (CDC, 2008). These statistics are not isolated to heterosexual couples, as same-sex couples are at greater risk and report a greater incidence of violence than heterosexual couples (West, 2012). While IPV generally cuts across all genders, races, and levels of socioeconomic status, there are subpopulations that are seen at greater risk for IPV.

A subpopulation that is seen at greater risk for IPV are members of the United States military. The largest portion of active duty military members are below the age of 25, which make their population distribution younger than average U.S. civilians (Office of the Deputy Assistant Secretary of Defense, 2013). This young age, in combination with stressors of military lifestyle such as frequent moving (i.e., Permanent Changes of Station), stressful duties and work environments, and deployments can lead a couple to be at greater risk for IPV. However, military service experiences are only part of the explanation of IPV risk factors in military couples.

There is growing evidence that service members have a greater incidence of Adverse Childhood Experiences (ACEs) than civilians (Blosnich, Dichter, Cerulli, Batten, & Bossarte, 2014). CDC data from the 2010 Behavioral Risk Factor Surveillance System Survey were analyzed to explore the relationship between ACEs and military service. A total of 60,378 respondents were included in the sample. Males and females with a history of military service were more likely than civilians to report ACEs. Males

with prior military service were twice as likely to report four or more ACEs from their childhood compared to males without a history military service (Blosnich, et al., 2014). These traumatic experiences, which often lead to Post-Traumatic Stress Disorder (PTSD), in combination with military service, are linked to higher risk for IPV (Taft, et al., 2011; Xue, et al., 2015). All of these factors may shed light on the differences in prevalence of IPV in military and civilian samples.

Some studies have suggested that rates of IPV are higher in the military than in the civilian population. IPV perpetration rates have ranged from 32-47% in active duty Army samples (Marshall, Panuzio, & Taft, 2005). In a survey of over 600 randomly selected active duty women across all four military branches (U.S. Army, U.S. Navy, U.S. Marine Corps, U.S. Air Force), 21.6% reported being victims of IPV during their military service (Campbell et al., 2003).

Three studies have been conducted using larger, more representative military samples. The first study was by Pan and colleagues (1994) who randomly sampled 15,023 white male Army soldiers stationed across 38 U.S. located military installations from 1989-1992. Soldiers were included in this study if they were married or living with an intimate partner. The one-year prevalence rate of violence for these soldiers was 29.9%.

In the second study, Heyman and Neidig (1999) surveyed 33,762 married active duty Army soldiers across 38 different installations between 1990 and 1994. The active duty Army sample was compared against civilian results from the 1985 National Family Violence Survey. Moderate (pushed, grabbed, slapped, kicked) and severe (choked, use of a knife or gun, threatened with knife or gun, beat up) forms of male-to-female violence

were found in 13-17% of the Army sample and in 10-12% of the civilian sample. While this difference was statistically significant, researchers stated the result was due to age and race of the Army sample, with over half of the sample being under the age of 31, compared to 29% of the civilian sample (Heyman & Neidig, 1999). Once age and race were controlled for, the rates across the Army and civilian sample were similar, but significantly different.

Finally, a 2006 Air Force sample of 42,744 active duty men and women revealed that 19.6% of males and 18.3% of females were victims of IPV within the past year (Foran et al., 2011). In addition, 12.9% of males and 15.1% of females reported perpetrating violence with their spouse or partner within the past year. Although more females than males were found to perpetrate any IPV in this sample, males were more likely to report perpetrating IPV acts with potential for injurious impact (Foran et al., 2011).

More recently, the CDC used a Fiscal Year 2010 sample (1 Oct 2009-30 Sep 2010) of civilians, active duty females, and wives of active duty men who were surveyed about various forms of IPV (Robertson, 2014). This report, released in 2013, was the first instance of simultaneously comparing military and civilian women's reports of IPV. Results of the report showed that approximately 4 in 10 civilian women reported experiencing IPV in their lifetime. Both active duty females and wives of active duty men reported a rate of lifetime IPV of 1 in 3. Though these results are similar in number, active duty women were statistically less likely to report experiencing IPV than civilian women in the general population (Robertson, 2014). In summary, as Foran and colleagues (2011) concluded, prevalence rates for IPV in military samples are similar to

civilians that are adjusted for age given than higher rates of IPV are seen in younger couples and the majority of military couples are under 30.

The prevalence of IPV is an issue that impacts individuals, families, communities, and all levels of government. The estimated annual cost of IPV to the U.S. exceeds \$5.8 billion (CDC, 2003). Despite the uncalculated economic impact of IPV to the military, its larger impact may be on unit readiness (Department of Defense [DOD], 2003). Unit readiness is the ability of each unit to execute required missions and meet the demands of the overall U.S. military strategy across the globe (Chairman of the Joint Chiefs of Staff, 2013).

Given this impact on unit readiness, it is critical for the military to understand what factors increase a couple's risk for IPV. Since the attacks of September 11, 2001, service members have deployed multiple times in support of Operation Iraqi Freedom and Operation Enduring Freedom. Multiple deployments leading to increased rates of PTSD, traumatic brain injuries, and over a decade of war have increased the risk factors that make couples prone to IPV (Jones, 2012; Klostermann, Mignone, Kelley, Musson, & Bohall, 2012).

Previous research has examined factors which put active duty couples at risk for perpetrating IPV. Many of these factors such as younger age, race, male gender, socioeconomic status (or rank in the military), and alcohol misuse are consistent across military and civilian samples as risk factors. One factor which is unique to military samples is deployments and combat experiences that occur during those deployments.

The purpose of this study was to explore if deployments, total length of deployment, combat experiences from deployments, and PTSD symptoms increased an

active duty couple's risk for IPV. Previous research has found that deployment can be a risk factor for IPV, but the results have not been consistent. No study to date has examined combat experiences from deployment and total time deployed as contributing risk factors. Finally, PTSD symptoms have been known to increase risk for IPV, but it is unclear if this holds true when deployments are considered in active duty samples.

A random and representative sample of active duty airmen of the United States Air Force was used to conduct this study. By simultaneously looking at the effects of combat experiences, length of deployment, and PTSD symptoms this study can help to determine if these variables are predictive factors of IPV which can help inform practice and policy for how the military intervenes with IPV. However, before exploring the theories, policies, and practice models associated with IPV, a definition of IPV for this study will be given.

Intimate partner violence is a broad term which can encompass all forms of violence between intimate partners (Foran, Slep, Heyman, & United States Air Force Family Advocacy Research Program, 2011). Violence can be physical (e.g., punching, kicking, slapping, shoving), emotional or psychological (e.g., controlling access to friends and family, controlling finances, making the partner feel they are crazy or stupid, insulting or isolating their partner, name-calling, making threats to harm their partner's family or friends), or sexual (e.g., coerced sexual acts, rape) acts that have the potential to cause injury or even death (CDC, 2006). Multiple terms have been used in past literature to describe what is now referred to as IPV including spouse abuse, battering, psychological aggression, and physical aggression.

While there are many forms of IPV, the focus of this paper will only include physical IPV. Physical IPV will be defined as non-accidental physical force that is directed toward a person who is a current spouse or intimate partner with whom the abuser shares a common domicile (DOD, 2015; United States Air Force, 2009b). Physical IPV has been the most researched in previous review of studies and is easier to empirically define than other forms of IPV (Babcock, Green, & Robie, 2004; Rodrigues, et al. 2014).

CHAPTER TWO – LITERATURE REVIEW

Theories of Intimate Partner Violence

Feminist Theory

Feminist theory is a widely accepted theory used to explain IPV (Ali & Naylor, 2013b). The theory originated from the emergence of general feminist thought and the accompanying social movement in the 1960s and 1970s. Feminism sought to ensure that women were treated equally with men in society at large along with empowering women for social change (Ali & Naylor, 2013b). General feminist theory intersected with grassroots organizations that advocated for shelters and other social services for victims of IPV which became known as the Battered Women's Movement (Barner & Carney, 2011). This movement grew and broadened beyond providing shelters for victims to advocating for developing interventions for offenders of IPV and having appropriate criminal justice action against offenders (Ali & Naylor, 2013b).

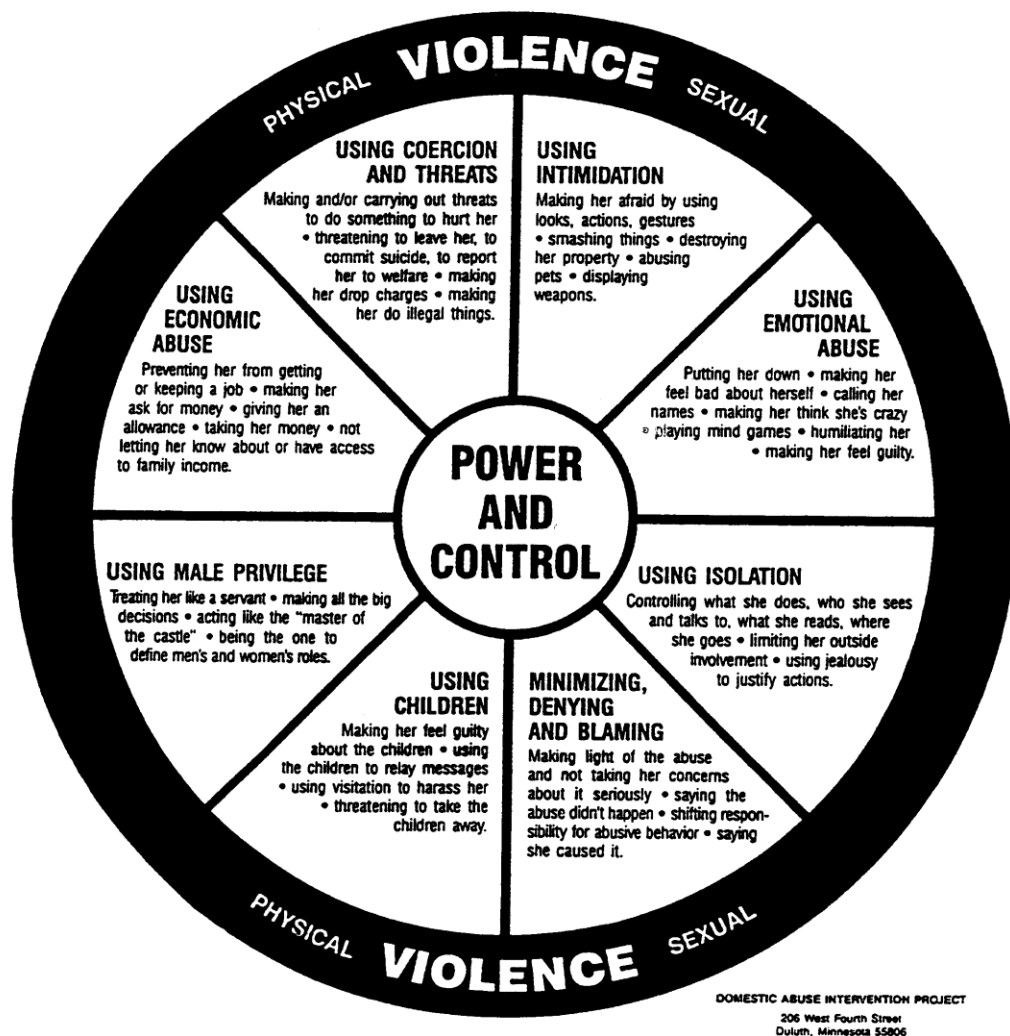
The basic tenets of the feminist theory for IPV involve power and control. From a macro perspective, IPV is a societal problem due to its acceptance of males in a role of power and domination over women who are supposed to be submissive to men (Ali & Naylor, 2013b). IPV is seen as the product of gender inequality in societies where women are viewed in rigid gender roles and are oppressed. This imbalance of power between the genders is manifested in incidents of violence in heterosexual couples. In same-sex couples, violence also functions as a result of power and control of one partner over the other, despite both partners being the same sex (Ali & Naylor, 2013b).

Feminist theory describes IPV from a micro perspective by asserting that men will perpetrate any form of violence or abuse in an effort to maintain power and control over

their female partners (Babcock, et al., 2004). This violence can include physically abusive acts ranging from pushing and shoving to strangulation; however, these acts are often accompanied with psychological or emotionally abusive behaviors such as isolating the victim, stalking, threats, controlling access to finances, family, or friends, and berating or demeaning comments (Pence & Paymar, 1993). Further, IPV is not limited to these behaviors as it also includes sexually abusive acts such as rape, marital rape, and infanticide (Ali & Naylor, 2013b). None of these actions are seen as isolated incidents. Rather, they all constitute a pattern of power, control, and domination by a male over his female partner. This pattern has been visually depicted by the Power and Control Wheel (see Figure 1) which identifies different domains in a relationship along with examples of how power and control tactics are exhibited (Pence & Paymar, 1993). This pattern is also often referred to as battering (Kelly, 2011).

Figure 1

Power and Control Wheel

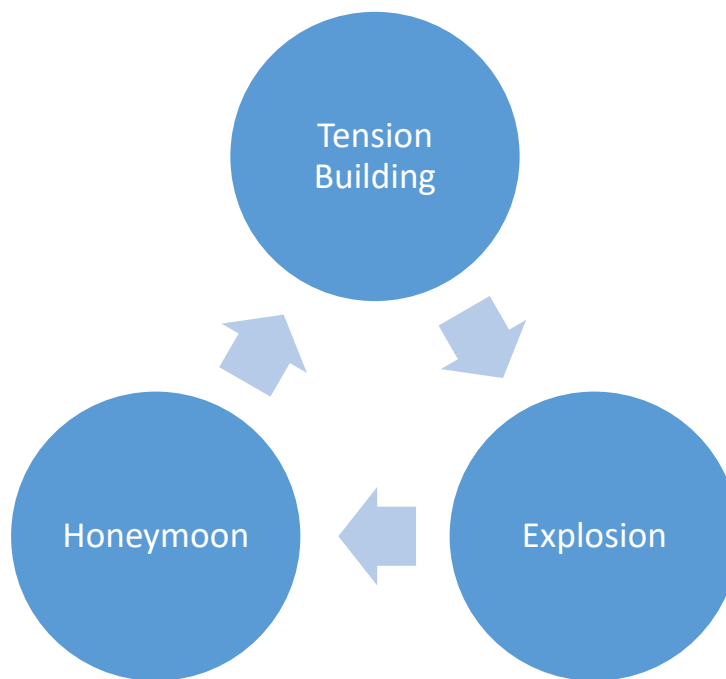


Battering encompasses other concepts built upon the foundation of a feminist theory of IPV. The Cycle of Violence model helped describe the battering process and attempted to explain why a victim would stay in an abusive relationship (Ali & Naylor, 2013b). Walker (2006) theorized that IPV occurs in three phases in a Cycle of Violence (see Figure 2). The first consisted of the Tension Building phase in the relationship which

eventually builds up to an Explosion phase where physical, psychological, or sexually violent acts occur over a period of seconds to days (Ali & Naylor, 2013b). This phase is followed by a Honeymoon phase in which the abuser is remorseful for his actions, commits to change, and the victim is manipulated into thinking that the abuse will not occur again. However, the Honeymoon phase eventually feeds back into a Tension Building phase and the cycle is repeated (Ali & Naylor, 2013b). This perpetual cycle may lead to learned helplessness on the part of the victim.

Figure 2

Cycle of Violence



Learned helplessness in IPV was modeled after research that demonstrated in an environment of unpredictable and repeated shocks, animals would eventually give up trying to find a way to avoid the shocks (Ali & Naylor, 2013b). Thus, in a relationship of unpredictable and repeated abuse, a victim will doubt her ability to make any positive changes and feelings of helplessness will develop. Some evidence has supported this

concept as it has been applied to IPV, e.g., women feeling that the abuse they endured was justified for refusing sex or not being subservient to their husband (World Health Organization [WHO], 2005). However, some have criticized learned helplessness as it does not account for other reasons that women stay in abusive relationships which can include ensuring financial or social stability for their children (Ali & Naylor, 2013b).

Two other concepts elaborate the feminist theory of IPV: Battered Women Syndrome and Patriarchy. Persistent battering of the victim can also result in Battered Women Syndrome (Walker, 2006). This syndrome was described as a form of Post-Traumatic Stress Disorder in which the victim re-experiences episodes of the violence as well as exhibits other symptoms related to repeated trauma exposure. Carried to an extreme form, some women that have exhibited this syndrome went on to murder their abusive partner (Ali & Naylor, 2013b). Patriarchy is an overarching concept that refers to societal acceptance of violence against and domination of women by men (Pence & Paymar, 1993). International research suggests that the more a society believes in patriarchy as acceptable, the more IPV will be tolerated and even sanctioned (Ali & Naylor, 2013b; WHO, 2005). Given all of these concepts that add layers of complexity to the phenomenon of IPV, one may question if IPV is able to be resolved. However, feminist theory offers solutions to the problem of IPV.

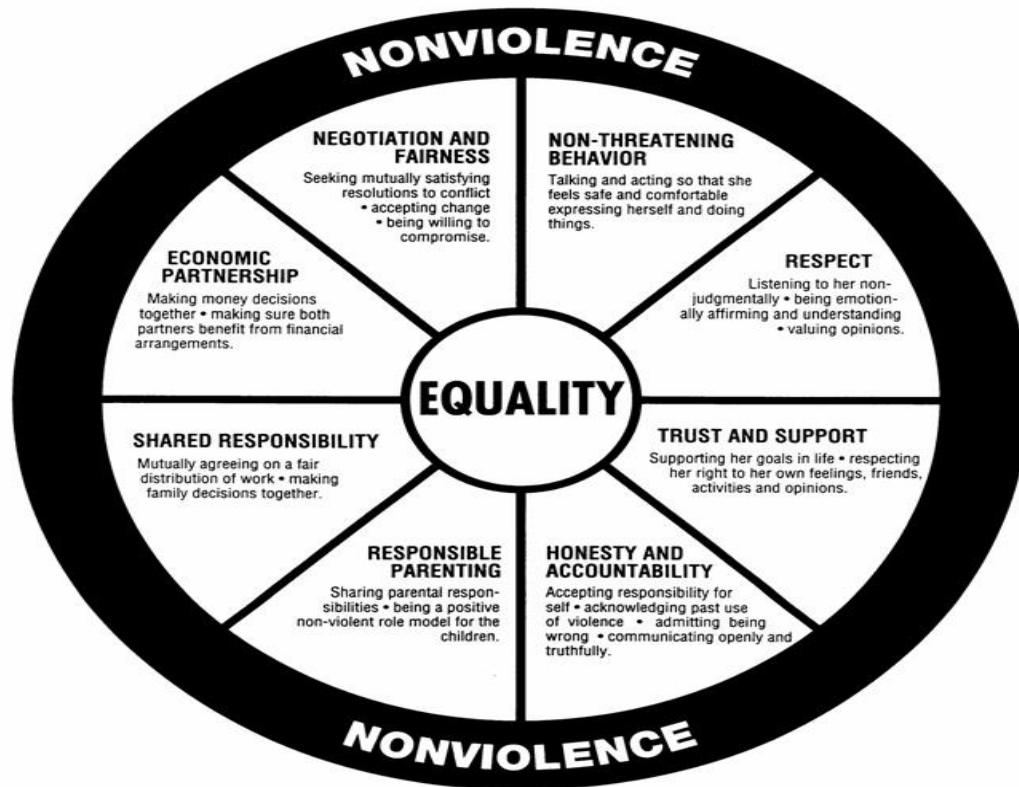
Successful resolution of IPV in feminist theory occurs at the micro and macro level. At the micro level, men abandon the abusive behaviors in the Power and Control Wheel and embrace the Equality Wheel (Pence & Paymar, 1993; see Figure 3). It should be noted that both of these wheels serve as conceptual frameworks from which the interventions in the Duluth Model are delivered (Pence & Paymar, 1993). The Equality

Wheel describes a relationship in which both partners are treated with respect and all behaviors occur in a spirit of nonviolence. At the macro level, IPV will diminish as society rejects ideas of patriarchy and gender inequality (Ali & Naylor, 2013b).

Evidence for feminist theory and the various concepts of IPV has been demonstrated for decades (Ali & Naylor, 2013b; Kelly, 2011; WHO, 2005). However, this theory of IPV has been met with criticism. One main argument against feminist theory concerns the concept of gender symmetry which states that men and women are equally violent in relationships which has been demonstrated in multiple studies (Archer, 2000; Johnson, 1995, 2006). In addition, it has been suggested that macro policies such as mandatory arrests and battering programs have resulted in government control over female victims which leads them to still being disempowered (Ali & Naylor, 2013b). In spite of the criticisms, many tenants of IPV treatment currently used are based on feminist theory. However, feminist theory fails to account for why some men perpetrate partner violence and others do not. Psychologists sought to account for the individual psychological factors that contributed to IPV.

Figure 3

Equality Wheel



DOMESTIC ABUSE INTERVENTION PROJECT
206 West Fourth Street
Duluth, Minnesota 55806
218-722-4134

Psychopathology Theory

Psychopathology theory for IPV is a broad term referring to violence being caused by psychological factors (e.g., anger, depression, anxiety, trauma) or personality traits in the psychological profiles of men who perpetrate violence towards their female partners (Ali & Naylor, 2013a). Common mental disorders, such as depression, have been found to be predictive of increased risk for mild or severe physical aggression (Pan, Neidig, & O’Leary, 1994). Pan and colleagues (1994) analyzed data of over 11,000 White males in the U.S. Army from 1989-1992 who were asked to rate items such as work stress, marital stress, depression symptoms, and substance problems. This data was then added to responses on a modified version of the Conflict Tactics Scale. The results showed that those who were mildly aggressive in their marital relationships reported more depressive symptoms than those who were not at all aggressive. However, those with severe aggression towards their partner complained of more depression than those who were moderately aggressive (Pan et al., 1994).

Personality traits and disorders have also been associated with higher rates of IPV among men (Ali & Naylor, 2013a). Tweed and Dutton (1998) compared physically abusive men to non-abusive men in order to determine which clusters of personality traits were associated most with men that perpetrated violence. After administering a battery of psychological assessments to 79 men that were in treatment for domestic violence, the results were compared to the control group. Two specific sub-types of violent males were identified based on personality traits that clustered together (Tweed & Dutton, 1998). The first subtype was an Anti-social/Narcissistic profile in which the male perpetrator is preoccupied with their partner but shows little affect. A second sub-type of violent men

displayed a profile with Borderline and Avoidant features, along with chronic anger (Tweed & Dutton, 1998). This study has confirmed findings of previous research demonstrating two distinct sub-types of men who perpetrate severe violence that exhibit traits of personality disorders (Gottman, Jacobson, Rushe, Shortt, Babcock, & La Taillade, 1995).

These findings were partially replicated by researchers interested in understanding how impulsivity, physical violence, and personality traits were related to each other (Edwards, Scott, Yarvis, Paizis, & Panizzon, 2003). These researchers used similar personality measures as in the study conducted by Tweed and Dutton (1998) with a sample of 43 men who had been convicted of IPV. Results indicated Antisocial Personality Disorder and Borderline Personality Disorder were significantly correlated with impulsivity and IPV. The researchers concluded that, since these two disorders were stronger predictors of violence than impulsivity and aggression, intense psychotherapy treatment is necessary to treat the underlying psychopathology of these male offenders (Edwards et al., 2003). These two specific clusters of traits have been validated in past research as well (Else, Wonderlich, Beatty, Christie, & Staton, 1993).

A potential problem arises, though, when the psychopathology theory is used in efforts to explain and resolve IPV. Based on the evidence that higher rates of psychopathology are associated with perpetrators of violence, it would logically follow that in order to resolve the violent behavior, the psychopathology must be treated. Yet, since the successful treatment of these personality disorders is a debated and controversial topic, there is no evidence to support that successfully treating the psychopathology in a batterer leads to a reduction in IPV (Ali & Naylor, 2013a).

There are two major limitations of the psychopathology theory to IPV. Although the data has demonstrated strong correlations between perpetrators and victims of IPV and mental illness and personality symptomology, none of the data has shown a causal relationship of these factors to IPV (Ali & Naylor, 2013a). Thus, no evidence exists at this time that demonstrates that mental illnesses or personality disorders cause a person to perpetrate IPV.

A second major limitation of this theory is that it does not actually explain how mental illnesses or personality disorders explain IPV. The only claim that can be used in this theory is that these factors are associated with higher rates of IPV. However, not all persons with a mental illness such as depression or personality disorder will perpetrate IPV. Likewise, not all persons who perpetrate IPV have a mental illness or personality disorder (Ali & Naylor, 2013a). Nonetheless, it is a theory that warrants further elaboration and testing.

Social Learning Theory

The field of sociology, in addition to social work and psychology, has also advanced theories of IPV. One such theory from sociology was social learning theory. Social learning theory began with the premise that the family serves as the primary source of learning for children (Black, Sussman, & Unger, 2010). Children learn how to communicate and socialize with other people inside and outside of their families by modeling the behavior they observed in their family. Since this learning is conducted primarily by observation of the parents by the child, the child learns how their parents, who are in an intimate relationship, manage and resolve conflict. They also learn what behaviors, whether violent or nonviolent, are acceptable in a relationship. Thus, violence

itself is a learned behavior and such behavior is first observed and then learned in the unique social environment of each child's family of origin (Bandura, 1977; Black et al., 2010).

However, behavior itself would not be observed with an equal weight given to each behavior. Social learning theory stated that those behaviors which maximized rewards and minimized consequences are the behaviors that would be modeled most frequently (Black et al., 2010). For example, if a child saw that his father achieved what he wanted from his mother by using force or intimidation, he would model such behavior. All of these learned behaviors would then account for those who witnessed violence towards their mothers were more accepting of violence and would often perpetrate violence in their adult relationships (Ali & Naylor, 2013b). This theory has received support in the literature (Ali & Naylor, 2013b; Desai, Arias, Thompson, & Basile, 2002).

Given the premise that men who perpetrate violence towards their female partners are more likely to have witnessed or experienced violence in their childhood, what about the children of these men who grow up in abusive homes? Do they continue to perpetrate violence in their future adult relationships? Is it a perfect correlation or do only a small percentage commit IPV? Social learning theory has been used to study the effects of an intergenerational cycle of violence (Ali & Naylor, 2013b).

The intergenerational cycle of violence asserts that if children either witness or experience violence, they are at greater risk for being a victim or perpetrator of IPV in adulthood (Ali & Naylor, 2013b). One study sought to test the intergenerational cycle of violence model with college students (Black et al., 2010). A sample of 292 undergraduate students were surveyed about violence in their parents' relationship as well as their

current relationship. Almost 70% of the sample self-reported psychological abuse and 27% reported physical abuse in their relationships in the past year. The participants reported that 58% had observed psychological abuse and 17% observed physical abuse in their parents, and both forms of abuse occurred within the past year (Black et al., 2010).

There are some limitations of social learning theory in explaining IPV. One limitation is the construct of observing or witnessing violence in childhood (Ali & Naylor, 2013b). This term has been defined with some variability in the literature and has also likely included a recall bias since the studies are conducted with adults (Ali & Naylor, 2013b). Further, this theory is only able to investigate the relationship between witnessing and experiencing violence in childhood and the effect of IPV in adulthood. Causality is not able to be tested by this theory without longitudinal studies that follow children who witnessed IPV into their adult relationships. Finally, not all persons who commit IPV as adults were abused or witnessed abuse as children and vice versa (Ali & Naylor, 2013b). Social learning theory is unable to account for the variability in those who perpetrate IPV in adulthood by solely identifying a positive history of violence in the family of origin.

Ecological Theory

One theory that attempts to merge the individual, familial, and even societal influences on the development of IPV is ecological theory. Ecological theory begins with an assumption that families function as systems, with the family as one single system and parents, children, and an individual family member all acting as sub-systems within the main family system (Turner, 2011). In the hypothetical case of a husband using violence towards his wife, it is likely that the husband witnessed violence in his home as a child,

was abused as a child, and believes that violence toward his partner is an acceptable method of resolving conflict. These individual factors alone do not account for all the influences on his behavior (Lawson, 2012). Patterns of conflict occurring within the marital sub-system, or conflict that results from a parent-child sub-system, can contribute to the development or maintenance of partner violence in the microsystem of a family (Ali & Naylor, 2013b).

However, the family system is not isolated from other outside forces that can affect the family system. Poverty, unemployment, neighborhood prevalence of intimate partner violence, community values, level of connection in a community, and socioeconomic status are examples of macrosystem factors that can all influence IPV in the family system (Ali & Naylor, 2013b; Lawson, 2012). Finally, exosystemic factors such as societal acceptance or rejection of relationship violence, media portrayal of relationships, gender roles, race, ethnicity, societal or religious influence of egalitarianism can also influence IPV (Ali & Naylor, 2013b; Lawson, 2012). All of these influences make up a nested ecological theory of IPV, where each of these systems (individual, microsystem, macrosystem, and exosystem) influence the other and interact with each other in explaining IPV.

Since it is comprehensive in addressing all potential factors in the development and maintenance of IPV, a major limitation of the nested ecological theory is the difficulty in developing intervention models based on the theory. While the Duluth model may come close to being a community-based approach, it still does not identify which micro, meso, or macro factors caused a specific individual to perpetrate IPV (Dutton &

Corvo, 2007). Further, while interventions in meso, macro, or exospheres of practice can aid in reducing IPV, those outcomes can be difficult to measure at any level of practice.

The ecological theory of IPV has been tested using a representative sample of active duty Air Force members and their spouses (Smith Slep, Foran, Heyman, and United States Family Advocacy Research Program, 2014). Researchers used the participants' responses to an anonymous community assessment survey in order to test the multiple ecological factors that can predict IPV. Community support, family financial stress, relationship satisfaction, individual functioning (i.e., physical health and well-being, depression, and coping skills), poverty, younger age, and alcohol use were all significant predictors of IPV in their community sample. All of these factors, in addition to support from formal agencies, provide evidence of the ecological theory of IPV as valid in this sample. While all of these previous theories could apply to active duty military members, they do not account for the specific influence of the military subculture that can contribute to IPV (Klostermann et al., 2012).

Cultural Spillover Theory

Cultural spillover theory is believed to help explain IPV in the context of military culture. As described by Bradley (2007), when a culture endorses the use of violence as a means to an end, there is a greater chance that violence will be legitimized in other areas of life where violence is not as socially accepted. Since the military is a subculture in which violence is seen as a way to accomplish its goals or mission, members who enlist in the military may see violence as an acceptable form of conflict resolution in their relationships. Thus, the military's cultural acceptance of violence can spill over into an

individual military member's use of violence in their day-to-day life and especially in intimate relationships (Bradley, 2007).

In an attempt to find empirical support for this theory, Bradley (2007) examined a sample of 5,418 heterosexual married or cohabitating couples from the National Survey of Families and Households Wave I to compare violence rates among veterans and non-veterans. Results indicated that veterans were less likely to exhibit IPV than non-veterans and combat exposure among veterans was not a significant predictor of IPV when compared to veterans with no combat experience. Despite having a national dataset, there was only a small sample (13%) that had combat experience which may have resulted in not finding significance. Further, this sample had a low reported rate of severe male violence in the past year (3%) and thus the data may have underrepresented couples with more severe types of violence (Bradley, 2007). There are several other theories that provide explanations for IPV (e.g., biological, attachment theories), but the focus of this review is not to describe all IPV theories. Rather, it serves as a review of major IPV theories in order to understand how they have informed IPV interventions.

Same-Sex Violence

The previously reviewed theories of IPV do not have an explicit assumption of male to female perpetrated violence; however, these theories have almost all been developed and tested based on this assumption. Some theories, such as social learning theory, may not have a specific construct dealing with perpetrator gender while feminist theory bases its explanation of IPV using an assumption of male-to-female violence. Unfortunately, no study to date has been conducted on same-sex violence being experienced among active duty service members despite the repeal of "Don't Ask, Don't

Tell” in 2011. Once that law was repealed, service members could serve regardless of their sexual orientation. Civilian studies indicate an increased risk for IPV among same-sex couples (CDC, 2011).

A discussion of IPV may only tell part of the story. Implicit in each theory of IPV is a set of values, assumptions, and philosophies about relationships, violence, privacy, and a host of other concepts. Therefore, one cannot adequately examine the IPV in the civilian or military sector without first acknowledging the potential philosophy and values behind IPV.

Philosophy and Values

A basic value that comes into conflict when the subject of IPV is discussed is the question as to whether or not one person has a right, privilege, or even obligation to abuse their intimate partner. One perspective asserts that an intimate partner, especially female, should be subservient and obedient to their partner. Proponents of this view may use religious texts, such as the Holy Bible, to justify the notion that wives should be submissive to their husbands and, therefore, should be abused if they are not submissive (Colossians 3:18, King James Version). Conversely, other religious texts state that men and women should be respectful of one another and that those who abuse their spouse will be held accountable before God (The Church of Jesus Christ of Latter-day Saints, 1995).

A related value regarding whether or not partners should be abused is the idea that since abuse is often perpetrated inside of a family’s own home, it is a private issue and thus is not anyone else’s business. However as prevailing this notion has been, it has not been able to withstand the legal challenges associated with it. The Uniform Code of

Military Justice, the law for service members, as well as state statutes define domestic abuse as a crime regardless if it occurs in the privacy of one's home (Robertson, 2014).

Military culture may also promote a host of cultural values that influence IPV (Bradley, 2007; Stander, Thomsen, Merrill, Rabenhorst, Crouch, & Milner, 2011).

Hypermasculinity, which has been linked with IPV perpetration, is believed to be found in military culture (Standar et al., 2011). This term is characterized by the acceptance of violence and a comfort with danger which is almost necessary in some operational duties in the military. Operational assignments in the military including, but not limited to, security forces, explosive ordinance disposal, and infantry are accustomed to violence and use violence to ensure survival (U.S. Bureau of Labor Statistics, 2014). This familiarity with and consistent use of violence can transfer into the home life of the active duty service member (Bradley, 2007).

Theories and values can provide a framework for understanding why couples experience IPV. Researchers have been interested in these conceptual ideas for decades. A greater question, however, could be what happens to a couple when they experience IPV? How does society respond to these couples? First, the civilian response to IPV and how treatment is conducted will be considered. Following this review, a framework for the process the military goes through in responding and treating IPV will be explained.

Civilian Response to Intimate Partner Violence

Criminal Justice

A large component of the civilian response to IPV involves the criminal justice system. Currently, over 90% of IPV interventions are court-mandated as part of sentencing for a misdemeanor or felony charge related to IPV (Barner & Carney, 2011).

Thus, a small percentage of perpetrators of IPV seek treatment voluntarily. In addition, most states have enacted various criminal justice policies to mitigate IPV beyond mandatory intervention: mandatory arrest and “no-drop” policies (Barner & Carney, 2011).

Mandatory arrest policies, which emerged during the 1980s, required law enforcement that responded to a potential incident of IPV to arrest an alleged perpetrator, so long as there was reasonable suspicion that a violent crime took place (Barner & Carney, 2011). This mandatory arrest took place without regard to the alleged victim’s desire. While mandatory arrest policies brought additional public attention to IPV, researchers have been unable to conclude that the policy has any effect on reducing future incidents of IPV (Barner & Carney, 2011; Felson, Ackerman, & Gallagher, 2005). Further, an unintended consequence of mandatory arrest policies has been “dual arrests” in which both partners are arrested for partner violence. This consequence has led to abused women, who have been arrested previously, to be less likely to use the criminal justice system during future incidents of IPV (Bliss, Cook, & Kaslow, 2006).

Historically, victims of IPV had been reluctant to participate in criminal cases against their partner which would lessen the chances that their partner would be criminally convicted of IPV. In response to this, “no-drop” policies were implemented which mandated prosecution of all cases of IPV without regard for the victim’s consent or cooperation (Barner & Carney, 2011). One study cited a significant advantage of this policy as victims being more likely to establish a protective order against their partner (Davis, O’Sullivan, Farole Jr., & Rempel, 2008). However, the costs associated with

prosecuting every case of IPV can be excessive and only a small percentage of cases may actually lead to a conviction (Davis et al., 2008).

While the criminal justice system plays a large role in addressing IPV, intervention models for perpetrators of IPV are also a key part of effective community intervention. Initial responses to family violence in the U.S. relied on the criminal justice system and psychiatric institutions. Men that perpetrated violence against their partners were believed to have psychiatric illnesses and were often sent to hospitals for treatment (Barner & Carney, 2011). The rise of women's shelters for victims of IPV became popular as the feminist movement gave rise to the shelter movement (Barner & Carney, 2011). In shelters women were protected from their male abusers, but no attention was being placed on rehabilitating the men. The Duluth Domestic Abuse Intervention Project was started in 1981 as a way to coordinate a community response so that men who perpetrated violence could be held accountable and their female partners could also receive services (Pence & Paymar, 1993). This project became the genesis of Batterer Intervention Programs (BIPs) (Barner & Carney, 2011).

Batterer Intervention Programs

Despite the abundance of BIPs for treating IPV, few studies have been conducted to systematically analyze their philosophical approach, structure, and treatment length. Price and Rosenbaum (2009) identified 2,557 U.S. programs and analyzed survey results from 276 programs across 45 states. Though not a representative sample, 53% of BIPs stated they exclusively used the Duluth model, 49% used Cognitive Behavioral Therapy (CBT), and many BIPs acknowledged a mixture of both CBT and Duluth interventions (Price & Rosenbaum, 2009). Some have criticized this method given their fundamental

differences in philosophical assumptions and intervention strategies (Babcock et al., 2004; Dutton & Corvo, 2007; Price & Rosenbaum, 2009).

Despite the differences in philosophical assumptions, many BIPs treat each participant in a similar fashion. In fact, 90% of surveyed BIPs reported treating perpetrators in a one-size-fits-all approach (Maiuro & Eberle, 2008; Price & Rosenbaum, 2009). Attendees of BIPs are often mandated to attend by the criminal justice system for a specified number of weeks (Eckhardt, et al., 2013). BIPs are run in an open-group format and facilitated by one to two licensed therapists; however, some states only require that direct service providers hold a Bachelor's degree and not be licensed at the Master's level or above (Idaho Council on Domestic Violence and Victim Assistance, 2011).

The survey also revealed dramatic differences in the length of treatment. The mean length of treatment was 31 sessions with each session lasting approximately 90 minutes (Price & Rosenbaum, 2009). This mean may have been influenced by some state standards such as in California and Idaho that require programs to last at least 52 sessions (Maxwell, Davis, & Taylor, 2010; Price & Rosenbaum, 2009). Price and Rosenbaum (2009) noted that the median and modal number of sessions was 26 which is in accordance with the Duluth model (Pence & Paymar, 1993). However, not all programs operated from this framework as the range of sessions was 6-90 in this survey. This large variation in BIP treatment length has been confirmed by other research (Maxwell et al., 2010). While there is a fair amount of variance in treatment length of surveyed BIPs, the original concept of BIPs lasting 26 weeks comes from the Duluth model (Pence & Paymar, 1993).

The Duluth Model.

Foremost among treatment modalities for BIPs is the Duluth model, a psycho-educational approach based on the Duluth Domestic Abuse Intervention Project (Babcock et al., 2004; Barner & Carney, 2011; Pence & Paymar, 1993). Started in 1981 in Duluth, MN, the Duluth model was based on a feminist view of IPV which stated that men perpetrate violence against their female partners based on societal acceptance of male domination and control over women. This societal acceptance is further fueled by a patriarchal system of men being in positions of power (Babcock et al., 2004; Stover, Meadows, & Kaufman, 2009). The goal for men who attend BIPs based on the Duluth model is to understand the ways men use intimidation, economic abuse, emotional abuse, isolation, threats, and violence in a pattern of exerting power and control in their relationships (Pence & Paymar, 1993).

In the Duluth model, men are educated on the Power and Control Wheel, which is a visual depiction of ways in which men maintain power and control over their female partners (Pence & Paymar, 1993). One example is how perpetrators of IPV often use children as a means to gain control by threatening to harm them or take them away. The Power and Control Wheel does not distinguish between physical, emotional, or sexual forms of violence, but illustrates that all act in a pattern of controlling behaviors initiated by men over their female partners. Thus, violence is not seen as a mismanagement of anger in isolated incidents, but as a pattern of abuse that does not cease without education (Pence & Paymar, 1993).

Change is accomplished in the Duluth model by moving men from perpetrating behaviors on the Power and Control Wheel to actions identified on the Equality Wheel

(Pence & Paymar, 1993). The Equality Wheel is the foundation of an egalitarian relationship where men are not in positions of power over women, but both partners are on equal ground. In addition, men will treat their partners with respect, share equal responsibility in the relationship, and use non-threatening behavior when resolving conflict (Pence & Paymar, 1993). The ultimate goals of the Duluth model are for men to become aware of violence aggressed towards their partner, to accept responsibility for the violence and not blame their partner, to become willing to change their behavior by examining the costs to their relationship, and to implement nonviolent, non-controlling interactions in their relationship (Pence & Paymar, 1993).

The Duluth model is the oldest model of BIPs and the most widely used (Babcock et al., 2004; Barner & Carney, 2011; Stover et al., 2009). Some states require BIPs to use the Duluth model as the framework for BIP treatment in order to be state-certified to treat IPV (Maiuro & Eberle, 2008). Despite being the most widely used, the Duluth model has not been without criticism. It has been criticized as being confrontational, rather than therapeutic in its approach to assisting men in changing their behavior (Dutton & Corvo, 2007). In addition, it is based on the premise that men are the primary perpetrators of violence (Pence & Paymar, 1993). This assertion, however, has not been supported by research. Straus (2011) noted over 200 studies, including samples in the U.S., United Kingdom, and Canada that described gender symmetry in IPV. Gender symmetry is defined as men and women equally perpetrating acts of physical violence towards each other. Due to these, and other, reasons therapists working in BIPs began to search for alternative models of practice (Babcock et al., 2004; Dutton & Corvo, 2007).

Cognitive Behavior Therapy.

CBT emerged as an alternative to the Duluth model for BIPs (Babcock et al., 2004; Eckhardt, et al., 2013; Price & Rosenbaum, 2009). CBT is originally based on Cognitive Therapy which was developed by Aaron Beck in 1976 (Dutton & Corvo, 2007). Beck (1976) noted when persons have an inaccurate perception of a single objective reality this can lead to feelings of depression, anxiety, and other emotional disorders. In essence, activating events from the environment are interpreted by a person's thoughts which then produces a mood (Greenberger & Padesky, 1995). If a person's thoughts are distorted or unbalanced, this can lead them to interpreting a triggering event from the environment incorrectly; thus, the resulting mood and behavior will be inappropriate to the situation (Eckhardt et al., 2013).

While CBT has been used to treat a number of psychiatric disorders, its application to IPV has deemphasized the role of power and control and instead focused on skill-building as the way to reduce IPV (Dutton & Corvo, 2007; Eckhardt et al., 2013). Violence in a relationship can stem from a variety of contributing factors and CBT aims to teach the necessary skills for perpetrators to make positive changes. Anger, unmanaged conflict, and cognitive distortions are seen as some of the major factors that CBT targets in treating IPV (Eckhardt et al., 2013).

Addressing anger, unmanaged conflict and the restricting of cognitive distortions, in addition to others, make up the CBT approach to treating IPV. Other strategies such as emotion regulation, problem-solving skills, and recognizing the pros and cons of violence also fall under the CBT model (Babcock et al., 2004; Eckhardt et al., 2013; Saunders & Hanusa, 1986). Facilitators of BIPs that use CBT will establish a positive therapeutic

relationship with attendees (Dutton & Corvo, 2007; Eckhardt et al., 2013). Despite these two different, yet popular, practice models of BIPs, other models of practice in treating IPV have emerged and are being evaluated (Babcock et al., 2004; Eckhardt et al., 2013; Price & Rosenbaum, 2009).

Alternative Models.

Solution-Focused Models.

Solution-focused BIPs have been implemented with male and female perpetrators of IPV. Unlike the Duluth model, a solution-focused IPV model does not assume a gender bias towards male perpetrators and female victims (Milner & Singleton, 2008). Solution-focused IPV treatment aids perpetrators in focusing on solutions to their violence rather than the problems associated with or causes of their violence (Milner & Singleton, 2008). Specifically, participants are asked to consider the miracle question, which helps them imagine their relationships without violence, if a hypothetical miracle were to occur in their relationship (Turner, 2011).

A solution-focused model asks perpetrators to consider exceptions to their violent behavior. These exceptions are defined as times when, despite feelings of anger or hostility, they were not violent, thus helping them develop confidence in their ability to control their behavior (Milner & Singleton, 2008). Other intervention strategies include establishing clear and measurable goals, using scaling questions, and recognizing the signs of safety (Milner & Singleton, 2008).

Scaling questions are used in conjunction with goal-setting by helping the participants rate how close they are to achieving their goal (Turner, 2011). In addition, scaling questions are used to assess how safe their partner feels in the relationship

(Milner & Singleton, 2008; Turner, 2011). The signs of safety approach helps perpetrators identify positive, measurable behaviors associated with relationship safety instead of the absence of negative, violent behaviors (Milner & Singleton, 2008). Milner and Singleton (2008) reported their results using solution-focused therapy with 68 adults (52 men and 16 women) over a three year period. In total, 18 men dropped out or were asked to leave treatment but the remaining male and female participants remained violence-free following treatment (Milner & Singleton, 2008).

Transtheoretical Models.

Transtheoretical models that employ Motivational Interviewing (MI) strategies have also been used with perpetrators of IPV (Eckhardt et al., 2013). This model assists men in moving successfully through stages of change in which they resolve ambivalence towards changing their violent behavior. One example of MI used during BIP was conducted by Crane and Eckhardt (2013).

In this study, the researchers randomly assigned 82 participants to a brief motivational interview session (treatment) or informational session (control) before beginning a BIP. The motivational interviewing session helped men resolve ambivalence they had in continuing violent behavior, which is often present during early stages of change. In addition, the interview session helped men analyze the pros and cons of maintaining compliance with the BIP and how this behavior could correspond to their values (Crane & Eckhardt, 2013).

Crane and Eckhardt (2013) concluded that the single motivational interviewing session provided to the treatment group enabled them to have significantly improved BIP compliance compared to the control group. However, they did not find differences in the

treatment group compared to the control group in recidivism rates. The most promising finding, however, was that this single session had the greatest effect with those men whose readiness to change was considered low in that these men attended significantly more BIP sessions than those men in the control group condition with low readiness to change (Crane & Eckhardt, 2013).

Couples Interventions for Intimate Partner Violence

Not all treatment for IPV is done using a BIP format. Some therapists have successfully used couples therapy to treat IPV (McCollum & Stith, 2008). The Strength-at-Home project is one intervention model that has been tested with military/veteran couples (Taft, Macdonald, Monson, Walling, Resick, & Murphy, 2013). The intervention was a 12-session cognitive behavioral couples group focused on reducing IPV in service members or veterans with a diagnosis of Post-Traumatic Stress Disorder. Six male participants in the treatment group (five veteran and one active duty) were in a relationship with an intimate partner for at least six months and had a disclosed male-to-female act of physical aggression in the past 6-12 months. At the six-month follow up, both physical and psychological forms of IPV significantly decreased from pre-treatment measurement for the treatment group. Since there was no control condition and the sample size was small, further research is needed to replicate these findings in such a vulnerable population (Taft et al., 2013).

Using a couples based approach to treat IPV does not come without criticism. Based on a feminist approach of power and control, by not separating a perpetrator from a victim in treatment, the victim could be manipulated to stay in an abusive relationship (Pence & Paymar, 1993). Further, a couples based approach must at least philosophically

allow for a variety of treatment approaches for different types of batterers, which discourages a one-size-fits-all approach (Friend, Bradley, Thatcher, & Gottman, 2011; Maiuro & Eberle, 2008; Price & Rosenbaum, 2009). Clinicians using a couples based approach note that clinicians need to be able to screen men and women individually to determine appropriateness of couples therapy which can take additional training and time. Further, couples experiencing severe violence (e.g., IPV involving a weapon) would not be appropriate for couples therapy and would generally be referred to a BIP (McCollum & Stith, 2008). Since BIP has been the common modality of IPV treatment, research of IPV treatment has measured BIP outcomes.

Treatment Outcomes for Civilian Intimate Partner Violence

Initial outcome research on the effectiveness of BIPs showed results in reducing the frequency and/or severity of violence (Feder & Wilson, 2005). These studies employed a pre/post measurement or compared those who completed treatment to those who did not. However, various methodological problems influenced the findings (e.g., small sample sizes, only studying those that completed treatment, no comparison groups, poor outcome measurement) (Labriola, Rempel, & Davis, 2005). Later studies began to use quasi-experimental designs that compared treated batterers to those that did not attend batterer treatment and showed mixed results (Feder & Wilson, 2005). Finally, true randomized control trials began to be conducted on BIPs. These experimental studies yielded conflicting results from no significant differences in recidivism between treatment and control groups to BIP treatment having a positive effect on recidivism (Babcock et al., 2004; Feder & Wilson, 2005). As a greater number of experimental and

quasi-experimental studies began to be published, researchers were then able to conduct meta-analyses on the outcome literature.

Meta Analyses.

The largest meta-analysis was conducted by Babcock and colleagues (2004). A total of 22 studies were selected for review, yet only 5 of the 22 were considered experimental designs. While not the goal of the meta-analysis, the researchers were able to compare the effect of the Duluth model to CBT BIPs. Although there were five studies which used different treatment approaches other than Duluth or CBT, they were unable to be included in the statistical model for comparison due to the low number of studies.

A number of findings resulted from this review. The first result was that the effect of the intervention on recidivism, depending on study design and outcome reporting method (i.e., police report or victim report), ranged from $d = .09$ to $d = .34$ which was considered a positive, yet small effect. A second analysis comparing Duluth vs. CBT treatment effects yielded no significant difference. Babcock et al. (2004) posed a number of implications from their review. Given that the overall effect of BIP was considered small, regardless of outcome report type, treatment model used, or study design, one may wonder if a BIP is even worth the effort when compared to the chances of an offender being re-arrested without any treatment. For example, based on victim's reports, men who completed treatment had a 40% chance of remaining violence-free compared to a 35% chance for those that did not receive treatment. Babcock et al. (2004) noted, however, that even with a 5% increase in chances of success would lead to 42,000 women per year not experiencing the harmful effects of intimate partner violence.

Feder and Wilson (2005) conducted a second meta-analysis, but were more selective as they only included studies that were true experimental designs or had equivalent groups in quasi-experimental studies. The overall effect size based on their review of four experimental studies ranged from no effect ($d = .01$) for recidivism based on victim report and small effects on recidivism ($d = .26$) based on police report (Feder & Wilson, 2005). Quasi-experimental studies yielded a small harmful effect (with a no-treatment comparison), but studies that compared a treatment group to a dropout group were positive. Based on these mixed results, Feder and Wilson (2005) were doubtful about the overall effectiveness of BIPs.

After reviewing the extensive findings of past research, Murphy and Ting (2010) noted three possible conclusions that can be drawn from the literature. One positive conclusion, based upon one large multi-site study, is that BIP completion reduced the recidivism probability by 33% in the entire sample of 633 men, with a 50% reduction for 495 of the 633 men that were court-ordered to participate (Jones & Gondolf, 2002). An entirely negative conclusion based upon the review by Feder and Wilson (2005) is that BIP had no effect on recidivism when relying on victim report. Finally, a middle-ground conclusion using the largest meta-analysis conducted, indicated that BIPs produce a positive, but small, effect on recidivism (Babcock et al., 2004; Murphy & Ting, 2010).

With such controversial results in the literature for the effectiveness of BIPs in treating IPV, a critical and inquiring mind would want to know if there is more to this finding than the data is telling. The answer to that question is in the affirmative. In order to fully understand IPV outcome research, it is critical to understand the assumptions that

these empirical studies are based upon. These cannot be addressed without first unpacking the paradigms and philosophical tenants of scientific inquiry.

Paradigms

Guba (1990) defines a paradigm as “a basic set of belief that guides action, whether of the everyday garden variety or action taken in connection with a disciplined inquiry” (p. 17). Paradigms in the specific context of scientific inquiry have drastically different implications for conducting research. The broad paradigms of scientific inquiry fall into three categories: postpositivism, constructivism, and critical theory (Guba, 1990).

Postpositivism is viewed as a modern form of positivism (Guba, 1990).

Positivism operates from the idea that there is a fixed reality, outside of a person, and the goal of scientific inquiry is to discover this reality. If reality exists in the external world, then knowledge about reality must come from observation, or empiricism (Guba, 1990). By observing reality in a value-free manner, one can discover facts and understand ultimate truth (Delanty & Strydom, 2003). A problem with positivism arises, however, when the observer cannot be completely value-free thus forming an inquirer bias (Guba, 1990). Two different people may observe the exact same phenomenon and describe it in different ways.

Postpositivism, therefore, acknowledged the limitations of positivism and adopted a critical realist stance of reality which states that a true understanding of reality cannot be understood by an imperfect human (Guba, 1990). Yet, an external reality still exists and can be understood via an accumulation of scientific knowledge. The scientific methods employed by postpositivist researchers are experimental designs. These designs

consist of independent and dependent variables. Assuming that all variables are adequately controlled for and properly measured, a change in an independent variable is believed to cause a change in a dependent variable. These changes in variables either form or confirm a theory of behavior and these theories can be later verified through experimental research (Creswell, 2013; Guba, 1990).

Constructivism has emerged as a dramatically different paradigm in science, especially in response to postpositivism. Constructivists argue that the empirical methods of postpositivism are value-laden, not value-free (Guba, 1990). Thus, what a researcher wants to research in “reality” is really their construction of reality since an objective reality does not exist. This leads constructivists to claim that there is no such thing as scientific truth, but relativism as an antithesis to objective truth is their ontological stance (Guba, 1990).

Constructivists, based on their philosophical assumptions of reality (ontology) and the relationship between the knower and the known (epistemology), approach scientific inquiry in a dialectic manner (Guba, 1990). Qualitative research methods are seen as a co-constructive process in which the researcher, with his/her biases and experiences, attempts to gain an in-depth understanding of a phenomenon from the participant in the phenomenon, not through observation. Since observation is value-laden, it cannot be trusted as an accurate source of information. Thus, the experience of the participant is sought after via interviews using open-ended questions (Creswell, 2013).

Critical Theory is a third paradigm of social science research. Critical theorists are concerned with the nature of reality and values, but they are certain to point out that those who have power determine the nature of reality and what values are important (Guba,

1990). The goal of scientific inquiry is to correct an imbalance of power in society and to empower the oppressed so that they can create social change. Research methods employed by critical theory researchers may vary so long as the goal is to cause a transformation in society (Creswell, 2013; Guba, 1990).

The feminist view of IPV is an example of Critical Theory. Society's acceptance of males as the dominant gender in a patriarchal, controlling manner over women contributes to male violence. Behaviors such as pushing, shoving, threats, demeaning comments, intimidation, and isolation were all viewed as ways that a male would exert power and control over his female partner (Pence & Paymar, 1993). Successful resolution of male violence has focused on moving men from abusing positions of power in their relationships to positions of equality. As a result, critical theory research would move to ensure that oppressed women in violent relationships are emancipated from their oppressors.

The research conducted in this study is based on a postpositivist paradigm of scientific inquiry. While the other forms of scientific inquiry can provide value to the understanding of IPV, having a postpositivist emphasis on empirical behavior and quantitative data in the context of IPV is paramount. Research conducted in a postpositivist framework has been able to demonstrate measurable change for perpetrators and victims of IPV across a variety of treatment settings. This paradigm of scientific inquiry is also shared by many IPV researchers as well.

Paradigms in Intimate Partner Violence Outcome Research

Research in IPV has been dominated by a postpositivist paradigm of science. True experimental designs with random assignment have been lauded as the gold

standard of research; yet even studies with such rigor have only yielded small to no effect on recidivism (Babcock et al., 2004; Feder & Wilson, 2005; Murphy & Ting, 2010).

Given the ethical, practical, and moral issues in conducting these studies, only a small number of true experimental designs exist (Eckhardt et al., 2013; Feder & Wilson, 2005).

For example, is it ethical in experimental designs to randomly assign batterers to a no-treatment control condition in order to preserve internal validity? Postpositivists assert that, with a large, representative sample subjected to a randomized clinical trial, changes in the dependent variable are due to the treatment condition and such outcomes can be expected across samples in future research.

Another example of how the paradigm of postpositivism influences BIP research is in measuring outcomes. A common approach to determining BIP effectiveness comes by measuring the amount of violence perpetrated following treatment for a specified period of time (Babcock et al., 2004; Eckhardt et al., 2013; Feder & Wilson, 2005). This is commonly referred to as recidivism. This reporting time can range from a few months to over a year. Researchers will solicit this outcome data by examining police reports/county databases to determine if the participant has been arrested again, by asking the female partners of the male participants to report on any violence since concluding treatment, or both. Treatment success is defined as no repeat incidents of physical violence during the follow-up period, but this method poses a number of challenges as well (Babcock et al., 2004).

Police reports as a measure of success assumes that during an incident of violence following treatment that the victim will call the police and the batterer was arrested during the incident. Feder and Wilson (2005) commented that victims may be hesitant to

do this for a number of reasons. One reason could be for fear of retaliation by the batterer. Another reason could be the disbelief in the criminal justice system and its ability to adequately reform the perpetrator. A third could be the financial costs associated with treatment as batterers are typically required to pay for their treatment out-of-pocket. Further, victims often rely on perpetrators for some form of financial support, therefore a perpetrator going jail and not earning an income is a hardship. A final reason could be the victim's desire to not have her male partner/spouse return to jail and be subject to a court-imposed no-contact order.

Relying on the female partner report also poses challenges for researchers making conclusions about the effectiveness of treatment. The first challenge is that the attrition rate of victims can range dramatically from 30-80% (Feder & Wilson, 2005). True treatment successes or failures are not captured by researchers due to victims' data not being accounted for because of an inability to capture their report. Victims who do not follow up in research studies are often thought to be in relationships where they are subjected to continual and severe abuse (Feder & Wilson, 2005).

Another limitation in past research studies has been that victims are typically only asked about repeat instances of *physical* abuse (Babcock et al, 2004). By focusing only on physical abuse, researchers may conclude treatment is successful when, in fact, emotional or psychological abuse of the victim continues. Related to this point is that any physical violence during or following treatment is seen as an unsuccessful case. Many studies have relied on this dichotomous approach to outcome, compared to examining a change, or reduction, in violence from pre-BIP to post-BIP (Babcock et al., 2004). Such a method would be similar to measuring substance abuse program outcomes by whether or

not a person has any relapse following treatment, when it is widely known that relapses often occur with substance addictions.

Military Response to Intimate Partner Violence

Family Advocacy Program

In 1975, the Family Advocacy Program (FAP) was initially established in the Air Force as a mechanism to respond to child maltreatment (Daley, 1999). Initially called the Child Advocacy Program and Regulation, the program was renamed in the 1980s to the Family Advocacy Program as it focused on all forms of family maltreatment (Mercier & Mercier, 2000). The FAP, mandated by DOD instruction, has been established in each of the branches of the U.S. military (Klosterman et al., 2012).

In 2003, the Department of Defense (DOD) published a list of almost 200 recommendations made by the Defense Task Force on Domestic Violence to address the various systemic problems of IPV in the military (DOD, 2003). Priority recommendations included the adoption of a culture that does not tolerate IPV, establishing victim advocacy services, and implementing DOD-wide training on IPV. A main focus of the recommendations was to replace the Case Review Committee (CRC) with the Domestic Violence Intervention Process Model. DOD instruction mandated each branch of service to establish programs to implement this process (Klostermann et al., 2012). This change dramatically impacted the way allegations and incidents of IPV were being administratively handled.

The CRC consisted of members from a service member's Command as well as members of the FAP which would ultimately substantiate alleged cases of IPV. In addition, the committee was responsible for making recommendations for treatment for

the alleged offender and alleged victim in the incident, thus combining the clinical and administrative process of the CRC. This created systemic problems as offenders would not be held accountable by their leadership unless cases were substantiated.

In the Domestic Violence Intervention Process Model, various agencies would each contribute expertise in establishing a comprehensive action plan to address each specific incident of IPV (DOD, 2003). Law enforcement agencies would provide on-scene and investigative action into each incident of IPV, while a service member's Commanding Officer would provide administrative support, discipline, and accountability. Each FAP would provide victim advocacy services as well as treatment for offenders of IPV, whether a member of the military or a civilian intimate partner or spouse. In order to understand how this process is executed in the military, the United States Air Force will be used as an example.

The United States Air Force FAP is directed by Air Force Instruction 40-301 (United States Air Force, 2009a). The instruction describes the general responsibilities of each category of involved persons in the response of the Air Force to IPV, from the Chief of Staff of the Air Force (the highest ranking member in the Chain of Command) to the mandatory reporting responsibilities of every service member in the United States Air Force, regardless of rank (United States Air Force, 2009a).

All known or suspected incidents of family maltreatment, including IPV, must be referred to the FAP (United States Air Force, 2009a). Alleged victims of IPV can approach the FAP and elect for a restricted report of abuse provided certain conditions are met such as not having a current injury or if any other person knows about the alleged incidents (United States Air Force, 2009b). In a restricted report, FAP provides

psychotherapy and victim advocacy services but does not notify law enforcement or the military chain of command of the alleged incident. If a victim does not elect for restricted report, then the report is unrestricted and FAP begins a risk assessment and clinical interview of all family members. Once the initial assessment is complete, the incident will be reviewed by a Case Review Committee (as it is referred to in the Army or Navy) or by the Central Registry Board. In the Marine Corps, it is known as the Incident Determination Committee. All committees serve the same function with different names.

In the Air Force, the Central Registry Board (CRB) is the service specific process of implementing the Domestic Violence Intervention Process Model (DOD, 2003; United States Air Force, 2009a; 2009b). On average, the Air Force reviews over 3,000 suspected incidents of IPV per year (Travis, et al., 2014). The CRB is a monthly committee attended by the Family Advocacy Officer (an Air Force social worker), a law enforcement officer, the Commander of the service member involved in each incident of alleged IPV, an Air Force attorney, and two members from the installation chain of command (United States Air Force, 2009b). This committee reviews available statements and facts about each incident, such as police reports and interviews with Family Advocacy social workers, and weighs the information based upon the preponderance of evidence. With this standard, the committee votes, with a majority rules, of whether or not each incident of alleged IPV meets research-based definitions of the various forms of maltreatment: physical, emotional, sexual and neglect (United States Air Force, 2009b).

If an incident meets criteria for maltreatment, the incident is entered into the Central Registry, a DOD database for substantiated incidents of maltreatment (Klostermann et al., 2012; United States Air Force, 2009b). The Central Registry is a

confidential database of all known offenders of maltreatment, whether a service member or civilian, and is not accessible to persons or entities outside of the DOD. The alleged offender and alleged victim are provided intervention plans with the recommended treatment.

Interventions are primarily given on a voluntary basis, with some exceptions. All civilians are voluntary and service members are encouraged to complete their recommended interventions on a voluntary status. Treatment will remain voluntary unless the Family Advocacy Program recommends that the Commander mandate treatment to ensure victim safety (United States Air Force, 2009b). Service members may be discharged due to the criminal charges related to their offense or for failure to comply with treatment recommendations (Klostermann et al., 2012; Shewmaker & Shewmaker, 2014). The Lautenberg Act may also lead to a service member's discharge as it prohibits a person convicted of a misdemeanor for domestic violence from possessing a firearm, ammunition, or explosives (Shewmaker & Shewmaker, 2014).

Military Treatment for Intimate Partner Violence

Interventions for IPV most often occur within the Family Advocacy Program, though some services outside of the program may be recommended in exceptional circumstances (United States Air Force, 2009b). Foremost among interventions may be a military order of protection, often used as a supplement to civilian protective orders, by which a service member's commander prohibits contact with the other partner. Examples of recommended therapeutic interventions may include anger management, individual counseling, marital/couples therapy, batterer intervention programs, victims groups, and prevention education about IPV (United States Air Force, 2009b).

Thus, the Family Advocacy Program is tasked with providing appropriate individual, couples, and/or group therapy for alleged offenders and alleged victims in incidents of IPV. This can be a complex and difficult task as a variety of theories, treatment modalities and resources are involved in treating military couples affected by IPV. This can be complicated by the cultural reality of the military favoring short-term interventions in order to ensure service members are ready to deploy in the shortest amount of time possible.

Since the majority of military IPV treatment is conducted by the Family Advocacy Programs located at installations worldwide, it is necessary for these programs to provide practice methods that are evidence-based. Within the DOD, clinical practice guidelines have been established for the treatment of a variety of physical and mental health disorders using evidence-based practices. For example, Post-Traumatic Stress Disorder is recommended to be treated by a number of trauma-focused psychotherapies including Cognitive Processing Therapy and Prolonged Exposure (U.S. Department of Veterans Affairs, 2010). Yet, such robust and specific clinical practice guidelines do not exist in the DOD for IPV. This could be due to the limited number of studies measuring IPV outcomes in the military (Brewster et al., 2002; Dunford, 2000; Neidig, 1986).

Military Treatment Outcomes for Intimate Partner Violence

Only three studies have tested the treatment effectiveness of active duty service members being treated for IPV by the Family Advocacy Programs across military branches (Brewster, Milner, Mollerstrom, Saha, & Harris, 2002; Dunford, 2000; Neidig, 1986). Neidig (1986) measured the evaluation of the Domestic Conflict Containment Program, a 10 week skills training session conducted with Marine Corps men

(Klostermann et al., 2012; Neidig, 1986). The curriculum was developed by the researcher and included behavioral rehearsal, social learning, and principles from cognitive therapy. The sample of male Marines in the treatment group had at least one incident of serious physical violence against their female spouse in the previous six months. Of note is that the male Marines were ordered to attend and their spouse was encouraged to attend the conjoint treatment sessions. Results indicated that the treatment group showed statistically significant improvement, compared to a non-abusive, non-treatment control group, on the Dyadic Adjustment Scales and other measures of stress and locus of control (Neidig, 1986).

Brewster and colleagues (2002) evaluated the treatment outcome of the Air Force Family Advocacy Program. A total of 2,991 perpetrators of spousal physical abuse from 1989 to 1996 participated in the study. Approximately 75% of the sample were male with the rest being female. Outcomes were measured prior to treatment, at the conclusion of treatment, and 6 months following the conclusion of treatment. Marital satisfaction, child abuse potential, and family relationship scales were used to assess treatment outcome. Significant differences post-treatment and at follow-up were found. Researchers found the sample improved in marital satisfaction and family relationships skills, along with decreased child abuse risk and family conflict (Brewster et al., 2002).

This study of Air Force Family Advocacy treatment was unique in that it did not measure the effectiveness of any specific protocol for IPV treatment. Individual, group, and marital therapy, anger management, stress management, alcohol counseling, communication skills training, and batterer groups were some of the 16 different types of interventions used with spouse abuse perpetrators (Brewster et al., 2002). Further, the

sample was obtained from a total of 88 Air Force bases worldwide, so there was considerable variability in the amount, frequency, and type of interventions used in these Family Advocacy Programs.

There were several limitations with this study (Brewster et al., 2002). While the study only included perpetrators of spousal physical abuse, no data was obtained that actually measured the frequency or severity of violence. Surprisingly, victim report or law enforcement records following treatment were not included in the data analysis. In addition, the outcome measures were given via self-report of the perpetrator of the abuse which can be subject to bias (Babcock et al., 2004). Finally, a lack of a control group to which the treatment sample could be compared left the researchers unable to draw definitive conclusions of the impact of treatment. Many of these limitations were improved upon in a study conducted in one particular Family Advocacy Program of the United States Navy.

The only experimental design conducted of these studies was the San Diego Navy Experiment (Dunford, 2000). Dunford (2000) compared two CBT treatment groups to a rigorously monitored group; all three conditions were compared to a no-treatment control group. One of the CBT groups served only men and the other groups were conducted conjointly. Both groups were involved in weekly treatment for six months and then monthly treatment for another six months. The curriculum used for the treatment group was formed by other researchers and both groups received treatment from the same male and female therapists. The rigorously monitored group was seen for monthly individual sessions by a Family Advocacy case manager. Results of the study indicated no significant difference among all three treatment groups, compared to an untreated control

group, of new incidents of IPV at one-year follow-up reported via police (3-6%) or victim (27-35%) (Dunford, 2000; Stover et al., 2009).

In summary, a variety of treatment approaches have been used by the military to address IPV. Neidig (1986) used skills training and elements of social learning theory to treat Marines in a group format. Dunford (2000) used cognitive behavioral therapy in an offender only and conjoint approach to IPV treatment. Brewster and colleagues (2002) tested these approaches as well as others to treat IPV including batterer intervention programs, communication skills training, and anger management.

When comparing these military IPV outcome studies with their civilian equivalents, a number of issues need to be highlighted. First, the volume of studies in the civilian community is far above the military population. While the civilians have dozens of outcomes studies for BIPs, and a growing body of evidence for alternative practice models, the military only has three studies from which to analyze and refine their current programs. A second issue concerns outcome measurement. The majority of the rigorous civilian outcome studies used the following modes of measurement: recidivism using victim and/or police report (measured at 6 or 12 months post-intervention) and/or some version of the Conflict Tactics Scale (Babcock et al., 2004; Eckhardt et al., 2013; Feder & Wilson, 2005; Straus et al., 1996). Of the three military IPV outcome studies, only the Dunford (2000) study used recidivism, in addition to psychological instruments, as a measure of successful outcome.

While research still needs to be done as to what interventions are most effective in treating IPV in active duty military couples, there are still questions about what increases a military couple's risk for IPV. If researchers had a better understanding of what these

factors were and which factors had the largest impact for IPV risk, researchers and military leadership could collaborate in order to have this knowledge inform program development and implementation. While some risk factors are similar across civilian and military couples, there are other risk factors unique to the military experience that can increase a couple's risk for IPV.

Military Risk Factors

Previous research has been conducted to understand what puts a couple at greater risk for IPV (Frye, Manganello, Campbell, Walton-Moss, & Wilt, 2006; Klostermann et al., 2012). Some of the risk factors include substance abuse, low income, having young children, younger age, mental health, and relationship satisfaction (Foran et al., 2011). These risk factors, and others such as deployments, combat exposure, and PTSD are present in the men and women that serve in the United States military (Slep, Foran, Heyman, & Snarr, 2010; Smith Slep, et al., 2011).

A recent methodological review was conducted of all studies of active duty and veteran samples involved in IPV from 1980-2010 (Rodrigues, Funderburk, Keating, & Maisto, 2014). A total of 38 studies were identified as having only active duty members in their samples. In their review, Rodrigues and colleagues noted that previous research involving military members has shown that substance abuse, depression, and PTSD are correlated with IPV. Rodrigues and colleagues (2014) pointed out, however, that the majority of research involving active duty couples has not focused on military-specific risk factors including deployments and combat exposure.

Deployments

Deployments are a unique IPV risk factor that separates a military population from civilians. Deployments are when a service member is deployed to a location away from their home duty station to perform a military mission for a period of time. Researchers compared deployed and nondeployed soldiers in the Army during 1990-1994 (McCarroll et al., 2010). Their survey was a random and representative sample involving 47 Army installations consisting of 26,835 respondents. Respondents were asked to self-report IPV with their spouse via the original Conflict Tactics Scale. All violence reported was perpetrated violence, not as a victim. The results were that a soldier who had a deployment in the previous 12 months was at a small but significantly greater risk for IPV than those soldiers who had not deployed when controlling for demographic variables (McCarroll et al., 2010). The increase in risk was most pronounced in soldiers who perpetrated acts of severe abuse (i.e., beat up, choked, threatened with a knife or gun, or using a knife or gun) and when the deployment was longer than six months.

Two other studies were conducted during this time frame prior to the Afghanistan and Iraq conflicts. McCarroll and colleagues (2003) surveyed a smaller sample ($n = 313$) of active duty Army soldiers who were deployed to Bosnia for six months. These soldiers were compared to nondeployers ($n = 712$) in rates of IPV. The results were that deployment was not a significant predictor of IPV. Similar findings were found by Newby et al. (2005) who surveyed the spouses of a sample of soldiers deployed at least six months to Bosnia. Deployment was not a significant predictor of IPV 10 months following the deployment. The results regarding deployment are mixed and thus warrant further investigation.

Since the Iraq and Afghanistan conflicts where service members have deployed multiple times to combat arenas, additional research has been done to determine if deployment truly is a predictive risk factor for IPV in active duty couples. Researchers from the United States Air Force analyzed all Air Force members with at least one substantiated incident of IPV (in the Family Advocacy Program) and had at least one combat-related deployment between 2001 and 2008 (Rabenhorst, et al., 2012). Across the entire sample of over 4,000 couples, deployment was not a significant predictor of substantiated IPV. However, if only an active duty husband was the perpetrator of IPV then deployment was a significant predictor as rates were 24% higher post-deployment. The abuse rate for active duty husbands perpetrating IPV when alcohol was involved was 36% higher postdeployment. These findings were not moderated by length of deployment or number of deployments (Rabenhorst et al., 2012).

Rabenhorst and colleagues (2013) expanded on this research by examining all married Air Force personnel that had a combat deployment during 2001-2008. By not limiting their sample to just those with a substantiated incident of IPV, their ability to detect population differences across 156,296 married Air Force members that deployed was critical. These Air Force members were matched up against the FAP database to determine a relative risk ratio of deployments on IPV (Rabenhorst, et al., 2013). This study focused on Air Force members who deployed rather than couples where one member (civilian or active duty) was involved in FAP (Rabenhorst et al., 2013). Similar results were found across the entire population of Air Force deployers as Rabenhorst et al. (2012) where overall IPV risk was lower postdeployment except when the IPV was rated as moderate/severe and alcohol was involved (Rabenhorst et al., 2013).

Post-Traumatic Stress Disorder

While Air Force studies have differed from Army studies in terms of the overall effect of deployment as a predictor of IPV, the research has demonstrated an effect, given varying factors such as alcohol, abuse severity, or deployment length, of deployments on IPV. It is possible that another factor, such as PTSD, could be contributing to increased IPV rates for certain deployers. This can be suggested as PTSD has been found to be linked to higher rates of IPV in military samples (Rodrigues et al., 2014).

Research has demonstrated approximately 16% of service members that return from OIF deployments have a diagnosis of PTSD one year following their deployment (Hoge, Terhakopian, Castro, Messer, & Engel, 2007). Teten and colleagues (2010) recruited OIF and OEF veterans and found that those with PTSD had significantly greater odds of reporting perpetration of IPV. Taft and colleagues (2011) conducted a meta-analysis of studies measuring the association between PTSD and relationship problems. Their analysis showed that samples involving military personnel with PTSD were at greater risk for physical and psychological aggression compared to civilians. In addition, research has pointed to deployments as a risk factor for developing PTSD (Xue et al., 2015). However, none of these studies have combat experiences while deployed in conjunction with PTSD symptoms as influencing factors in IPV rates following deployment.

Research Gap

The two studies completed by Rabenhorst and colleagues (2012, 2013) have looked at deployments as a single risk factor across all Air Force deployers. However, combat experiences during those deployments, such as receiving indirect fire, explosion,

seeing casualties, or firing a weapon may contribute to additional trauma. When considering these two factors of the actual combat experiences from deployment as well as PTSD symptoms, there exists a gap in the research with active duty couples involved in IPV.

Thus, the purpose of this study was to examine the effects of actual combat experiences from deployment as well as PTSD symptoms on IPV among military couples. In addition, this study aimed to provide additional evidence to determine if deployment alone is a significant risk factor for perpetrating IPV. Finally, length of deployment will be input as risk factor based on previous Army studies. Since the most recent and largest studies to date have been done with Air Force members, the current study focused on active duty Air Force members who have deployed to a combat zone.

CHAPTER THREE – METHODS

Research Questions

In order to investigate the effect of deployment, length of deployment, deployment combat experiences, and PTSD symptoms have on an airman's risk for perpetrating physical IPV, the following research questions and associated hypotheses were posed in this study.

RQ1. Which socio-demographic factors of airmen (gender, age, rank, history of depression, alcohol use, recent mental health treatment, relationship satisfaction and children in the home) have an association with perpetration of physical IPV by severity?

H1. All mentioned socio-demographic factors will have an association with perpetration of physical IPV and will need to be controlled for in subsequent logistic regression models.

RQ2. Is there an association between deployment, length of deployment, combat experiences on deployment, PTSD symptoms and perpetration of physical IPV by severity?

H2. There is an association between deployment, length of deployment, combat experiences on deployment, PTSD symptoms and perpetrating physical IPV.

RQ3. When relevant factors are controlled for (identified in RQ1), does deployment increase risk for perpetration of physical IPV by severity?

H3. Deployment will increase an airman's risk for perpetrating physical IPV.

RQ4. When relevant factors are controlled for, which of the following variables increase risk for perpetration of physical IPV by severity for airmen who have deployed: length of deployment, combat experiences on deployment, and PTSD symptoms?

H4. In the presence of relevant controls, deployment combat experiences, total length of deployment, and PTSD symptoms will each increase an airman's risk for perpetrating physical IPV.

Data Analysis Strategy

In order to test RQ1 and RQ2, i.e., to see if there was an association between each of the potential control and independent variables with the dependent variable, bivariate analyses were performed. A chi-square test for independence was used to test for associations among categorical variables (Gravetter & Wallnau, 2013). The assumptions of a chi-square test for independence are nominal data and a minimum number of data occurring in each cell of the cross-tabulated table. Due to the size of the sample data, these assumptions were met. After each potential control variable and independent variable was tested with the dependent variable, only variables with significant associations were included in multinomial logistic regression models to hold constant while testing the four independent variables in the study.

A multinomial logistic regression was used to answer RQ3 and RQ4. Multinomial logistic regression requires a categorical dependent variable with more than two levels and at least one predictor variable to estimate the odds ratio of being in either of the categories of the dependent variable (Meyers, Gamst, & Guarino, 2017). In this study, the dependent variable consisted of three levels: severe violence perpetrated (coded 2), moderate violence perpetrated (coded 1) which were compared to no violence perpetrated (coded 0).

Once relevant control variables were identified, each of the four independent variables were tested to see if, while holding relevant controls constant, they significantly

increased risk for perpetration of violence at either level of violence. In RQ3, all airmen in the sample were included to test if those who had deployed were at increased risk for violence perpetration at any severity level. However, in RQ 4, only airmen who had deployed were included in the analysis. In RQ4, all three deployment-related predictors were included in a model to test as predictors of violence, when holding relevant controls constant. See Table 1 for a summary of the analyses.

Table 1

Research Questions, Variables, and Statistical Tests

Research Question	Independent Variables(s)	Dependent Variable	Analysis
1. Which socio-demographic factors of airmen (gender, age, rank, history of depression, alcohol use, recent mental health treatment, relationship satisfaction and children in the home) have an association with perpetration of physical IPV by severity?	Gender Age Rank History of Depression Alcohol Use Mental Health Treatment Relationship Satisfaction Children in the Home	Severity Levels of Perpetrated Violence No Violence = 0 Moderate Violence = 1 Severe Violence = 2	Chi-Square Multinomial Logistic Regression
2. Is there an association between deployment, length of deployment, combat experiences on deployment, PTSD symptoms and perpetration of physical IPV by severity?	Deployment Length of Deployment Combat Experiences on Deployment PTSD Symptoms	Severity Levels of Perpetrated Violence No Violence = 0 Moderate Violence = 1 Severe Violence = 2	Chi-Square Multinomial Logistic Regression
3. When relevant factors are controlled for (identified in RQ1), does deployment increase risk for perpetration of physical IPV by severity?	Deployment	Severity Levels of Perpetrated Violence No Violence = 0 Moderate Violence = 1 Severe Violence = 2	Multinomial Logistic Regression
4. When relevant factors are controlled for, which of the following variables increase risk for perpetration of physical IPV by severity for airmen who have deployed: length of deployment, combat experiences on deployment, and PTSD symptoms?	Length of Deployment Combat Experiences on Deployment PTSD Symptoms	Severity Levels of Perpetrated Violence No Violence = 0 Moderate Violence = 1 Severe Violence = 2	Multinomial Logistic Regression

Dependent Variable

The basis for the dependent variable in this study was taken from 14 items of the 2013 CAS that asked airmen to indicate the frequency of physical acts of violence they perpetrated with their spouse/partner within the past 12 months. The items and response choices were similar in wording to the Conflict Tactics Scale but no exact comparison can be made (Straus, Hamby, Boney-McCoy, & Sugarman, 1996). The response choices for each item were Never, Once, Twice, 3 to 5 times, 6 to 10 times, and More than 10 times.

Various acts of physical violence were represented across the 14 items (see Table 2). Each of the items began with the phrase, “During the past year” and then the item followed. Items were: I slammed my [spouse/significant other] against a wall; I pushed or shoved my [spouse/significant other]; I used a weapon against my [spouse/significant other]; I slapped my [spouse/significant other]; I twisted my [spouse/significant other]’s arm or hair; I punched or hit my [spouse/significant other]; I kicked my [spouse/significant other]; I choked my [spouse/significant other]; I burned or scalded my [spouse/significant other]; I hit my [spouse/significant other] with an object that could hurt; I scratched my [spouse/significant other]; I bit my [spouse/significant other]; and I threw something that could hurt at my [spouse/significant other].

In order to answer the research questions, the dependent variable of perpetrated physical violence was coded as a multinomial variable. The severity of the IPV incident was grouped into two levels of violence severity similar to previous research using active duty Army soldiers (McCarroll et al., 2000). The first level of the multinomial dependent

variable, moderate violence, consisted of the following seven acts of IPV: slapped, twisted arm or hair, scratched, grabbed, pushed/shoved, bit, and threw something that could hurt my spouse. The second level, severe violence, consisted of seven items: used a weapon, choked, burned or scalded, slammed against a wall, punched or hit, kicked, and hit with an object that could hurt my spouse.

Airmen that answered at least six of the seven items for each category of moderate and severe IPV acts were included in a summative score for moderate and severe IPV. It was deemed that if airmen chose not to answer more than 2 of the total 14 items that an accurate assessment of relationship violence could not be determined due to missing data. When airmen endorsed any perpetration of any item in the severe IPV category, they were classified as having committed severe IPV, regardless of how many moderate IPV items they may have endorsed. Once the summary score was obtained for moderate and severe IPV acts, any frequency (i.e., once to more than 10 times) of perpetrated IPV was considered positive for a violent act and coded as 1. All never responses were recoded as 0 as the incident did not occur. No violence served as the reference category (see Table 2).

Table 2

Dependent Variable Coding

Variable Name <i>2013 CAS Item</i>	Violence Type	Multinomial Coding
Physical Violence <i>During the past year... Once Twice 3 to 5 times 6 to 10 times</i>	I slapped my spouse/significant other I twisted my spouse/significant other's arm or hair I scratched my spouse/significant other I grabbed my spouse/significant other I bit my spouse/significant other I threw something that could hurt at my spouse/significant other	*Moderate = 1

<i>More than 10 times</i> <i>Never</i>	I pushed or shoved my spouse/significant other	
	I slammed my spouse/significant other against a wall I punched or hit my spouse/significant other I kicked my spouse/significant other I used a weapon against my spouse/significant other I choked my spouse/significant other I burned or scalded my spouse/significant other I hit my spouse/significant other with an object that could hurt	Severe = 2

*Both levels of violence were compared to no violence (reference category)

Independent Variables

There were four independent variables in the study: deployment, total length of deployment, deployment combat experiences, and PTSD symptoms (see Table 3).

Deployment was measured by a single item which asks airmen if they had been deployed for longer than 30 days since September 11, 2001. The response choices were Yes/No.

Yes responses were coded as 0 and no responses were coded as 1. For this and other categorical variables in the study, the focus category of the variable were coded as 0 with non-focus responses coded as 1 to run correctly in multinomial logistic regression (Meyers, et al., 2017). The second independent variable was the total length of time the airmen was deployed since September 11, 2001. Response choices were 30 days-6 months, 7-12 months, 13-18 months, 19-24 months, and greater than 24 months. Each of these response choices was coded as a dichotomous dummy predictor with 30 days-6 months serving as the reference category.

Combat Experiences had six levels consisting of six items in the CAS (see Table 3). The items were: During your deployment, did you encounter dead bodies or see

people killed or wounded?; During your deployment, were you engaged in direct combat where you discharged a weapon?; During your deployment, did you ever feel that you were in great danger of being killed?; Were you wounded, injured, assaulted, or otherwise hurt during your deployment?; During your deployment, did you enter or closely inspect any destroyed military vehicles?; and During your deployment, were you indirectly exposed to combat (mortars, rockets, small arms, fire)? Each of the items had a Yes or No response choice except for the item “During your deployment, did you encounter dead bodies or see people killed or wounded?” which had five response choices (No, Yes [enemy], Yes [coalition], Yes [civilian], Yes [friends/acquaintances]).

In order to prepare this variable for the logistic regression, a “Yes” response to each of the five items with only a Yes/No response choice was coded as 0 and all other responses were coded as 1 to create dichotomous variables. Any “Yes” responses to the item that asked about encountering dead bodies or seeing people killed or wounded (regardless of identity of the person) was collapsed into a single dichotomous variable into a single code of 0 with all other responses coded as 1. This variable served as the reference category.

The fourth independent variable was the airman’s total score on the Primary Care PTSD (PC-PTSD) scale. The PC-PTSD is a 4-item measure used to briefly assess the most common symptoms of PTSD in a primary health care setting. The PC-PTSD asks participants if they have ever experienced anything in their life that was so frightening, horrible, or upsetting that, in the past month, they experienced symptoms in response to that event. The four symptom-based items are: Have had nightmares about it or thought about it when you did not want to?; Tried hard not to think about it or went out of your

way to avoid situations that reminded you of it?; Were constantly on guard, watchful, or easily startled?; and Felt numb or detached from others, activities, or your surroundings? Responses choices were Yes/No and one point is given for each Yes answer (Prins et al., 2003). The PC-PTSD demonstrated superior sensitivity and specificity than longer measures of PTSD (e.g., PCL) with good test-test reliability of .83 (Prins, et al., 2003). With a cutoff score of 3 out of 4, the PC-PTSD has acceptable sensitivity (77%) and specificity (85%) for a diagnosis of PTSD (Prins, et al. 2003).

The total score, ranging from 0-4, served as a continuous independent variable in the models. Despite the PC-PTSD cutoff score of three, the total score was used in order to better understand how an increase in PTSD symptoms could impact risk for IPV. Cronbach's alpha of the PC-PTSD in this study was sufficient to include in the analysis ($\alpha = .805$). See Table 3 for a summary of the operationalization of the independent variables.

Table 3

Independent Variable Coding

Variable Name	Original Response Choices	Study Coding
<i>2013 CAS Item</i>		
Deployment	No	Yes = 0
<i>Since September 11, 2001, have you ever been deployed greater than 30 days?</i>	Yes	No = 1
Deployment Length	30 days – 6 months	30 days – 6 months = 0
<i>Adding up all your deployments, what is the total amount of time you have been deployed since September 11, 2001?</i>	7 – 12 months	Other responses = 1
	13 – 18 months	7 – 12 months = 0
	19 – 24 months	Other responses = 1
	Greater than 24 months	13 – 18 months = 0
		Other responses = 1
		19 – 24 months = 0
		Other responses = 1

		Greater than 24 months = 0
		Other responses = 1
Combat Experiences: Dead Bodies	No	Yes (enemy); Yes (coalition); Yes (civilian); Yes
<i>During your deployment: Did you encounter dead bodies or see people killed or wounded?</i>	Yes (coalition)	(friends/acquaintances) = 0
	Yes (civilian)	No = 1
	Yes (friends/acquaintances)	Yes = 0
Combat Experiences: Discharged a Weapon	No	No = 1
<i>During your deployment: Were you engaged in direct combat where you discharged a weapon?</i>	Yes	
Combat Experiences: Danger of being killed	No	Yes = 0
<i>During your deployment, did you ever feel that you were in great danger of being killed?</i>	Yes	No = 1
Combat Experiences: Wounded	No	Yes = 0
<i>Were you wounded, injured, assaulted, or otherwise hurt during your deployment?</i>	Yes	No = 1
Combat Experiences: Destroyed military vehicles	No	Yes = 0
<i>During your deployment: Did you enter or closely inspect any destroyed military vehicles?</i>	Yes	No = 1
Combat Experiences: Indirect Combat Exposure	No	Yes = 0
<i>During your deployment: Were you indirectly exposed to combat (mortars, rockets, small arms, fire)?</i>	Yes	No = 1

PTSD	No	Total score ranging from
<i>In your life, have you <u>ever</u></i>	Yes	0-4
<i>had any experience that was</i>	(1 point for each Yes on items	
<i>so frightening, horrible, or</i>	A-D)	
<i>upsetting that, in the past</i>		
<i>month, you experienced the</i>		
<i>following?</i>		
<i>A. Have had nightmares</i>		
<i>about it or thought about it</i>		
<i>when you did not want to?</i>		
<i>B. Tried hard not to think</i>		
<i>about it or went out of your</i>		
<i>way to avoid situations that</i>		
<i>reminded you of it?</i>		
<i>C. Were constantly on</i>		
<i>guard, watchful, or easily</i>		
<i>startled?</i>		
<i>D. Felt numb or detached</i>		
<i>from others, activities, or</i>		
<i>your surroundings?</i>		

Control Variables

Previous research has found evidence for a variety of factors influencing a military couple's risk for IPV (Marshall et al., 2005; Rodrigues et al., 2014). Based on this literature, the following eight variables were deemed necessary to potentially control for in order to isolate the effects of the independent variables on the dependent variable. These eight variables could be conceptually clustered into three categories or domains impacting risk: individual (age, gender, and rank), mental health (depression, alcohol use, and mental health treatment), and relationships (relationship satisfaction and having children in the home).

The individual factor control variables were age, gender, and rank. Airmen were asked to indicate their age into categorical responses: 18-20, 21-25, 26-35, 36-45, 46-55, and Over 55. Given the low frequency of airmen in the lower and higher age ranges, and

to capture younger age as a risk factor for IPV, age ranges were collapsed into three dichotomous dummy predictors (ages 18-25, ages 26-35, ages 36 plus) with 18-25 years old serving as the reference category. Gender was a dichotomous response choice of male or female. Males were coded in a dichotomous variable as 0 to be the focus category for the regression. Pay grade, which is a military mechanism similar to socioeconomic status as it determines income and hierarchical status, was in categories as well: E1-E4, E5-E6, E7-E9, O1-O3, O4 or higher. Pay grade was recoded into a dichotomous variable with enlisted ranks (E1-E9) coded as 0 serving as the focus category compared to officers who were coded as 1.

Mental health factors were depression, alcohol use, and previous mental health treatment. Airmen were asked if they ever felt so down or depressed that it affected them almost every day for two weeks within the past year. The response choices were Yes or No. Yes responses were coded as 0 and no responses were coded as 1.

Alcohol use was measured using a slightly modified version of the 10-item Alcohol Use Disorders Identification Test (AUDIT). The AUDIT is a robust measure for detecting alcohol abuse and has been used in previous versions of the CAS (Saunders, Aasland, Babor, De La Fuente, & Grant, 1993; Smith Slep et al., 2014). The first eight items consist of response choices and accompanying points ranging from Never (0), Monthly or Less (1), 2-4 times per month (2), 2-3 times per week (3), and 4 or more times per week (4). Items 9 and 10 response choices and points range from no (0), yes, but not in the last year (2), and yes, during the last year (4). AUDIT total scores range from 0-40 with higher scores indicating greater problems for the participant when they consume alcohol.

The only difference between the 2013 CAS AUDIT measure and the AUDIT is the response choices for item nine which asks if during the last year if they or someone else has been injured because of their drinking. The 2013 CAS response choices differ in that they are the same as the previous eight items (i.e., Never, Less than Monthly, Monthly, etc.) instead of the original three response choices of no; yes, but not in the last year; yes, during the last year. Scores of 0-4 were assigned to each response choice. Thus, a direct comparison between 2013 CAS AUDIT scores and the AUDIT cannot be made; however, a close approximation was appropriate. Cronbach's alpha for the CAS version of the scale was sufficient for inclusion in the study ($\alpha = .734$). For the study, a total score of the 10 2013 CAS AUDIT items was generated and used as a continuous variable.

Finally, mental health treatment was assessed using a single item that asked airmen to indicate if they had received mental health, life skills, or counseling services from a variety of military and civilian resources. There were eight possible resources to choose from and airmen could select all that applied: Military OneSource; Military Family Life Consultants; Defense Centers of Excellence (DCOE) Outreach Center; Military Chaplain; Civilian Religious Leader; Family Practice/Primary Care Physician; Airman and Family Readiness Center; On-Base Mental Health Clinic (to include Family Advocacy or Alcohol and Drug Program); and Wind Directors of Psychological Health. A ninth resource option where the airmen could fill in the name of another source was not populated in this sample. The response choices were more than two years ago, within the past two years, or not at all.

Similar resources were combined to create four categories of resources. The DCOE Outreach Center was listed as its own resource as it serves as a resource center for

psychological health and traumatic brain injury and does not provide actual treatment. Next, Military Chaplain and Civilian Religious Leader were combined into one variable. Military OneSource, Military Family Life Consultants, and the Airman and Family Readiness Center were combined into a third resource as their services typically do not involve treating psychological disorders. Finally, Family Practice/Primary Care Physician, On Base Mental Health Clinic and Wing Directors of Psychological Health were combined into a fourth category as their treatment can involve psychological disorders and occur inside a military Medical Treatment Facility.

All four categories of resources were coded as dichotomous dummy variables with a code of 0 as the specific resource and all other responses coded as 1. The DCOE Outreach Center served as the reference category in the regression analyses. Only airmen that indicated they had received services within the past two years were controlled for in the model.

Two items made up the relationship factor domain. The first variable, relationship satisfaction, was measured using one item in the 2013 CAS. The item asked airmen to indicate, all things considered, how happy they are with the relationship with their partner. The response choices were Extremely Unhappy (1), Fairly Unhappy (2), A little unhappy (3), Happy (4), Very happy (5), Extremely happy (6), Amazingly happy (7), and Could not possibly be any happier (8). Response choices were collapsed into a single dichotomous dummy variable where Extremely Unhappy, Fairly Unhappy, and A little unhappy were coded as 0 and all other responses were coded as 1.

The second item concerned whether or not the airman had children in their home. The item asked airmen to indicate how many children they had living in their home.

Response choices ranged from none, 1 child, 2 children, 3 children, 4 or more children.

This item was collapsed into a single dichotomous dummy variable where having no children in the home was coded as 0 and children in the home was coded as 1 (see Table 4).

Table 4

Control Variable Coding

Variable Name <i>2013 CAS Item</i>	Original Response Choices/Coding	Study Coding
Gender	Male	Males = 0
<i>Are you?</i>	Female	Females = 1
Age	18-20	*Age 18-25 = 0
<i>In which age category</i>	21-25	Other responses = 0
<i>do you belong?</i>	26-35	Ages 26-35 = 0
	36-45	Other responses = 1
	46-55	Ages 36 plus = 0
	Over 55	Other responses = 1
Pay Grade	E1-E4	Enlisted (E1-E9) = 0
<i>What is your pay</i>	E5-E6	Officer (O1-O10) = 1
<i>grade?</i>	E7-E9	
	O1-O3	
	O4 or higher	
Depression	Yes	Yes = 0
<i>During the past 12</i>	No	No = 1
<i>months, were you</i>		
<i>ever so down or</i>		
<i>depressed that it</i>		
<i>affected you almost</i>		
<i>every day for two</i>		
<i>weeks?</i>		
Alcohol use	Total score of 10 items ranging from	Total Score
<i>Total score of 10-item</i>	0-40	
<i>AUDIT</i>		

Mental Health Treatment	Military OneSource	*DCOE = 0
<i>Have you received counseling, mental health care services, or life skills assistance from any of the following sources?</i>	Military Family Life Consultants	Other resources = 1
	DCOE Outreach Center	Military Chaplain;
	Military Chaplain	Civilian religious leader = 0
	Civilian religious leader	Other resources = 1
	Family Practice/Primary Care	Military OneSource;
	Physician	Military Family Life
	Airman and Family Readiness Center	Consultants; Airman and
	On-Base Mental Health Clinic	Family Readiness Center = 0
	Wing Directors of Psychological Health	Other resources = 1
		Family Practice/Primary
		Care Physician; On-Base
		Mental Health Clinic;
		Wing Directors of
		Psychological Health = 0
		Other resources = 1
Relationship Satisfaction	<i>Extremely unhappy</i>	Extremely unhappy;
<i>All things considered, how happy are you with your relationship with your partner?</i>	<i>Fairly unhappy</i>	Fairly unhappy; A little
	<i>A little unhappy</i>	unhappy = 0
	<i>Happy</i>	Other responses = 1
	<i>Very happy</i>	
	<i>Extremely happy</i>	
	<i>Amazingly happy</i>	
	<i>Could not possibly be any happier</i>	
Children in the Home	None	None = 0
<i>How many children currently live in your home?</i>	1 child	1 child; 2 children; 3
	2 children	children; 4 or more
	3 children	children = 1
	4 or more children	

* Reference Category

Sample

Since 1991 the Air Force has conducted a total force survey of community assets, results, and needs called the Community Assessment Survey (CAS). The 2013 CAS was the eleventh iteration of the survey and measured topics such as personal and family adjustment, personal and family adaptation, community well-being, resilience, mental health perceptions and treatment, deployments, housing and demographics. The CAS has

been conducted every 24-30 months since 1991 and is intended to provide installations and the Air Force, at large, with data to support positive installation interventions and develop action plans to address challenges for airmen.

The sample for this study came from a secondary data analysis of the 2013 CAS. The 2013 CAS was distributed to members of the active duty, reserve, and guard components of the Air Force along with spouses of service members of each respective component. In addition, civil service employees were invited to participate. The 2013 CAS included a random and representative sample of active duty members, spouses of active duty members, reservists, spouses of Reserve members, spouses of Guard members, and DoD Civilians. Since the focus of this study was active duty airmen, only data gathered from this group was used in the analyses. The active duty response rate was 24% to the survey, which was the highest of the three components (Reserve = 13%, Guard = 15%).

Respondents that were randomly selected to participate in the survey were notified via e-mail of their selection with an internet link made available for them to complete the web-based CAS. Participation in the survey was voluntary and only certain demographic variables were collected to ensure anonymity and confidentiality. The collection of survey responses was conducted by Ipsos, a research consulting firm contracted by the Air Force. Ipsos distributed the 2013 CAS between April and August 2013.

When conducting analyses on existing data sets, a concern arises regarding missing data. There were two forms of missing data in the 2013 CAS. The first form included responses for which there was no answer because the question did not apply.

For example, one item asked if the airman had been deployed for greater than 30 days since September 11, 2001. If the response was no, any subsequent survey items regarding deployment were not asked. This skip logic created missing data for which no data was created to substitute into the survey.

The second form of missing data was due to the survey allowing airmen to skip questions they did not want to answer in order to encourage response to items they did feel comfortable answering. Out of the approximately 1,124 items on the active duty version of the 2013 CAS, about 23 were required to be answered. These items dealt with demographic questions of service component (i.e., active duty, guard, or reserve), gender, rank, marital/relationship status, children in the home, duty station, pay grade, and deployments. Due to the sensitive nature of the items covered in this study, and the possibility of introducing bias by imputing missing data values, analyses were performed using a complete-case analysis where cases were excluded if there were any missing values from any of the variables. Further, before beginning any analysis, all cases were excluded that had missing data ($n = 7$) from the multinomial dependent variable of perpetrated physical IPV.

Since the purpose of this study was to address IPV risk in active duty airmen, inclusion criteria were that CAS respondents must have selected their status as an active duty service member. In addition, only active duty airmen who were either married or currently living with a significant other were included. For the first two research questions (relevant demographic factors and deployments), all active duty airmen that responded to the survey were included in the analysis. However, in order to examine the effect of deployment length, combat experiences and PTSD symptoms on risk for

perpetrating physical IPV, only airmen who had deployed at least 30 days since September 11, 2011 were included in the sample.

After including those airmen who met the inclusion criteria, and eliminating all cases with a missing value on the dependent variable, a preliminary sample remained. The data was examined to determine if it was sufficient to answer the research questions. Upon examining the data, the number of cases in the group that did not perpetrate physical IPV ($n = 18,236$) far exceeded the number of cases where any form of abuse was perpetrated ($n = 624$).

Based on such unequal group sizes in the dependent variable, it was believed that a multinomial logistic regression model could not be constructed such that it would accurately predict which cases would fall into any abuse vs. non-abuse group. Therefore, cluster sampling was used to create more equivalent group sizes. Cluster sampling is where a random sample is taken from an already existing group (or cluster) within the population (Rubin & Babbie, 2014). For the purposes of this study, the cluster was defined as the group of cases that did not perpetrate physical IPV.

A random sample of 5% of those cases was selected for inclusion in the study. Since the number of cases of perpetrated IPV was small in the preliminary sample, all of those cases were retained. Thus, the final sample consisted of all cases of perpetrated abuse in the 2013 CAS and a 5% random sample of those that did not commit abuse.

The final sample consisted of 1,501 airmen. The sample included 1,138 (75.8%) men and 363 (24.2%) females. The largest group of airmen were in the 26-35 age range (46.7%) and held the rank of E5-E6 (37.8%). Of the total respondents, 454 were officers (30.2%). The percentage of female airmen in this sample was higher (24.2%) than the

18.9% in the active duty Air Force population in 2013. Further, the ratio of officers was higher (30.2%) than the 19.8% officer population in 2013 (Office of the Deputy Assistant Secretary of Defense, 2013). In terms of relationship status, 92.3% of the sample were married and 63.9% had at least one child living in their home (see Table 5).

Table 5

Sample Demographics (N = 1,501)

Category	Sample
Gender	
Male	1,138 (75.8)
Female	363 (24.2)
Age	
18-25	232 (15.5)
26-35	701 (46.7)
36 and above	568 (37.8)
Relationship Status	
Married	1385 (92.3)
Living with partner	116 (7.7)
Children in Home	
Yes	959 (63.9)
No	542 (36.1)
Pay Grade	
E1-E4	196 (13.1)
E5-E6	567 (37.8)
E7-E9	284 (18.9)
O1-O3	187 (12.5)
O4 or higher	267 (17.8)
Deployment of greater than 30 days	
Yes	1059 (70.6)
No	442 (29.4)

Power Analysis

In performing quantitative data analysis, the concept of statistical power must be addressed. Statistical power is the probability that a particular statistical test will find a treatment effect if an effect actually exists in the data (Gravetter & Wallnau, 2013).

Quantitative studies must have a large enough sample size to detect such effects which

leads to the importance of analyzing power prior to the study. A priori values for the logistic regressions were set with an odds ratio of 1.3, $\alpha = .05$, and $1-\beta = .95$. The software program G*Power (Faul et al., 2007) was used to calculate the required sample size, yielding a necessary n of 1,188 participants to have sufficient power to detect an effect. Observed power analysis for this study was .98.

CHAPTER FOUR – RESULTS

All data were analyzed using the computer program Statistical Package for the Social Science (SPSS). Prior to beginning the bivariate analysis of the variables, descriptive statistics of the sample in relation to the dependent variable are presented. The act of violence that was perpetrated by the largest number of airmen (24%) was pushing or shoving their spouse/partner, while burning or scalding their spouse/partner occurred the least frequently (.002%) (see Table 6).

Table 6

Dependent Variable Descriptive Statistics

Item	Never	Once	Twice	3 to 5 times	6 to 10 times	More than 10 times	Missing
Moderate							
I slapped my spouse/significant other	1,393	73	14	11	2	6	2
I twisted my spouse/significant other's arm or hair	1,447	27	8	4	1	9	5
I scratched my spouse/significant other	1463	13	5	8	0	4	8
I grabbed my spouse/significant other	1,164	145	80	50	13	32	17
I bit my spouse/significant other	1,452	11	5	10	3	10	10
I threw something that could hurt at my spouse/significant other	1,409	52	15	10	1	2	12
I pushed or shoved my spouse/significant other	1,138	219	88	37	2	12	5
Severe							
I kicked my spouse/significant other	1,478	9	6	2	0	1	5
I punched or hit my spouse/significant other	1,410	40	18	15	1	5	12
I slammed my spouse/significant other against a wall	1,424	39	14	11	1	7	5
I used a weapon against my spouse/significant other	1,483	6	0	0	0	2	10
I choked my spouse/significant other	1,464	20	3	2	2	7	3

I burned or scalded my spouse/significant other	1,493	2	0	0	0	1	5
I hit my spouse/significant other with an object that could hurt	1,476	10	4	7	0	2	2

Next, each research question and hypothesis will be restated along with the corresponding results.

RQ1. Which socio-demographic factors of airmen (gender, age, rank, history of depression, alcohol use, recent mental health treatment, relationship satisfaction and children in the home) have an association with perpetration of physical IPV by severity?

H1. All mentioned socio-demographic factors will have an association with perpetration of physical IPV and will need to be controlled for in subsequent logistic regression models.

A chi-square test for independence was conducted on each level of each potential categorical control variable and the dependent variable. The alpha level was set at .05. The chi-square statistic, degrees of freedom, and p value are presented in Table 7. This hypothesis was mostly supported, however receiving services from DOCE [χ^2 (1, $n = 1,501$) = .963, $p > .05$] was found to not have a significant association with perpetrated IPV.

Table 7

*Chi-Square Tests for Independence with Categorical Controls and the Dependent**Variable*

Variable	χ^2	df	<i>p</i>
Gender			
Male	9.627	2	.008**
Age			
18-25	27.549	2	.000***
26-35	31.956	2	.000***
36 and over	74.307	2	.000***
Pay Grade			
Enlisted	7.239	2	.027*
Depression			
Yes in last two years	40.540	2	.000***
MH Treatment			
DCOE	.963	2	.618
Chaplain	42.225	2	.000***
AFRC	57.589	2	.000***
MHC	83.440	2	.000***
Relationship Satisfaction			
Unsatisfied	105.177	2	.000***
Children in Home			
Children in Home	34.906	2	.000***

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$

Alcohol use of airmen was assessed using a continuous variable of their total score of the 2013 CAS AUDIT items. A multinomial logistic regression was conducted using the AUDIT total score as the independent variable and the multinomial dependent variable. Results indicated that the airmen's AUDIT score provided a statistically significant model of IPV perpetration by severity level, -2 Log Likelihood = 183.899, χ^2 (2, N = 1497) = 82.468, $p < .000$. The Nagelkerke pseudo R^2 indicated that the model accounted for 6.4% of the total variance in perpetrated violence. The model had a

classification rate of 59.1% overall with 93% for no abuse, 6.8% for moderate abuse, and .2% for severe abuse. The Wald test indicated that the AUDIT score was a significant predictor of both moderate (Wald = 42.657, $df = 1$, $p < .000$, 95% CI = 1.093-1.179) and severe (Wald = 65.630, $df = 1$, $p < .000$, 95% CI = 1.159-1.273) violence. For every one unit increase in an airmen's AUDIT score, the odds of being in the moderate violence group was 13.5% greater and in the severe violence group was 21.4% greater when compared to no violence.

RQ2. Is there an association between deployment, length of deployment, combat experiences on deployment, PTSD symptoms and perpetration of physical IPV by severity?

H2. There is an association between deployment, length of deployment, combat experiences on deployment, PTSD symptoms and perpetrating physical IPV.

A chi-square test for independence was conducted on each level of each independent variable and the dependent variable. The association between deployment and perpetrated violence was tested with all airmen in the sample. The association between the two other deployment-related variables (length of deployment and combat experiences during deployment) was tested with the sample of airmen who had deployed. The chi-square statistic, degrees of freedom, and p value are presented in Table 8. This hypothesis was generally not supported as most of these variables did not have an association with perpetrated violence. However, deployment [$\chi^2 (2, n = 1,501) = 7.035, p < .05$] and having a 7-12 month total length of deployment [$\chi^2 (2, n = 1,059) = 9.637, p < .000$] were found to have a significant association with perpetrated IPV.

Table 8

Chi-Square Tests for Independence with Independent Variables and Dependent Variable

Variable	χ^2	df	<i>p</i>
Deployment			
Yes Deployed	7.035	2	.030*
Length of Deployment			
1-6 months	.804	2	.669
7-12 months	9.637	2	.008**
13-18 months	.401	2	.818
19-24 months	3.484	2	.175
Over 24 months	1.372	2	.503
Combat Experiences			
Dead Bodies	2.458	2	.293
Discharge Weapon	.230	2	.891
Danger of being Killed	4.590	2	.101
Wounded	3.630	2	.163
Destroyed Vehicles	3.062	2	.216
Indirect Combat Exposure	.198	2	.906

* $p \leq .05$ ** $p \leq .01$

PTSD symptoms in airmen was assessed using a continuous variable of their total score on the PC-PTSD. PTSD symptoms were assessed only for airmen who had deployed for at least 30 days. A multinomial logistic regression was conducted using the PC-PTSD total score as the independent variable and the multinomial dependent variable. Results indicated that the airmen's PC-PTSD score provided a statistically significant model of IPV perpetration by severity level, -2 Log Likelihood = 60.733, χ^2 (2, N = 1,059) = 47.433, $p < .000$. The Nagelkerke pseudo R^2 indicated that the model accounted for 5.3% of the total variance in perpetrated violence. The model had a classification rate of 61% overall with 92.3% for no abuse, 7.7% for moderate abuse, and 0% for severe abuse. The Wald test indicated that the PC-PTSD total score was a significant predictor of both moderate (Wald = 25.601, df = 1, $p < .000$, 95% CI = 1.237-1.618) and severe

(Wald = 38.443, df = 1, $p < .000$, 95% CI = 1.448-2.038) violence. For every one unit increase in an airmen's PC-PTSD total score, the odds of being in the moderate violence group was 41.5% greater and in the severe violence group was 71.8% greater when compared to no violence.

RQ3. When relevant factors are controlled for (identified in RQ1), does deployment increase risk for perpetration of physical IPV by severity?

H3. Deployment will increase an airman's risk for perpetrating physical IPV.

Based on the chi-square and multinomial regression analyses performed from RQ1, the following variables were controlled for in the multinomial logistic regression model: gender (focus category: male), age, pay grade (focus category: enlisted), depression (focus category: positive for depression in last 12 months), mental health treatment (positive for mental health treatment in past two years with MHC serving as reference category), alcohol use, relationship satisfaction (focus category: unsatisfied relationship) and children in the home (focus category: no children in the home). These variables were inserted into the model using the Enter method. The predictor variable in this analysis was if the airmen had been deployed for greater than 30 days since September 11, 2001. The alpha level was set at .05. The Wald statistic, odds ratios, degrees of freedom, p values, and 95% confidence intervals are presented in Tables 9 and 10.

Results indicated that these variables combined provided a statistically significant model of IPV perpetration by severity level, -2 Log Likelihood = 1832.690, χ^2 (22, N = 1,497) = 308.378, $p < .000$. The Nagelkerke pseudo R^2 indicated that the model accounted for 22.2% of the total variance in perpetrated violence. The model had a

classification rate of 63.9% overall with 78.2% for no abuse, 21% for moderate abuse, and 0.7% for severe abuse. The Wald test indicated that deployment status was not a significant predictor of either moderate (Wald = 25.601, $df = 1$, $p < .000$, 95% CI = 1.237-1.618) or severe (Wald = 38.443, $df = 1$, $p < .000$, 95% CI = 1.448-2.038) violence.

Five of the control variables were significant predictors of perpetrated violence and increased risk for moderate and severe violence (see Tables 9, 10). Those variables were AUDIT score, not having children in the home, receiving AFRC or Chaplain services in the prior two years, and relationship satisfaction. One control variable, age 36 and over, was a significant predictor but decreased risk for perpetrating violence in reference to 18-25 year old airmen. With regards to deployment, hypothesis three was not supported. When demographic variables were held constant, deployment did not significantly increase risk for moderate or severe violence.

Table 9

Multinomial Logistic Regression Results with Deployment as Predictor for Moderate Violence

Model	B	SE-b	Wald	df	Exp (B)	95% CI Exp (B)
Alcohol	.106	.021	25.175	1	1.112***	1.067 - 1.159
Enlisted Rank	-.126	.143	.778	1	.882	.666 - 1.166
Chaplain MH Treatment	.484	.166	8.520	1	1.623**	1.172 - 2.247
AFRC MH Treatment	.442	.154	8.204	1	1.556**	1.150 - 2.105
Relationship Satisfaction	1.236	.166	55.685	1	3.441***	2.487 - 4.761
No Children in Home	.353	.137	6.684	1	1.424**	1.089 - 1.861
Gender	-.131	.147	.791	1	.877	.658 - 1.171
Age 26-35	.088	.192	.210	1	1.092	.750 - 1.590
Age 36 and over	-.814	.218	13.882	1	.443***	.289 - .680
Deployment	-.033	.145	.051	1	.968	.728 - 1.286

* $p \leq .05$

** $p \leq .01$

*** $p \leq .001$

Table 10

Multinomial Logistic Regression Results with Deployment as Predictor for Severe Violence

Model	B	SE-b	Wald	df	Exp (B)	95% CI Exp (B)
Alcohol	.176	.026	44.430	1	1.192**	1.132 - 1.256
Enlisted Rank	-.111	.222	.249	1	.895	.580 - 1.382
Chaplain MH Treatment	.897	.229	15.306	1	2.453**	1.565 - 3.844
AFRC MH Treatment	.472	.221	4.581	1	1.603**	1.041 - 2.470
Relationship Satisfaction	1.308	.228	33.017	1	3.699**	2.367 - 5.778
No Children in Home	.610	.205	8.826	1	1.840**	1.231 - 2.752
Gender	-.363	.214	2.879	1	.696	.457 - 1.058
Age 26-35	-.419	.263	2.547	1	.657	.393 - 1.100
Age 36 and over	-.916	.309	8.778	1	.400**	.218 - .733
Deployment	-.109	.217	.252	1	.897	.586 - 1.373

* $p \leq .05$

** $p \leq .01$

*** $p \leq .001$

RQ4. When relevant factors are controlled for, which of the following variables increase risk for perpetration of physical IPV by severity for airmen who have deployed: length of deployment, combat experiences on deployment, and PTSD symptoms?

H4. In the presence of relevant controls, deployment combat experiences, total length of deployment, and PTSD symptoms will each increase an airman's risk for perpetrating physical IPV.

Based on the chi-square and multinomial regression analyses performed from RQ1, the following variables were controlled for in the multinomial logistic regression model: gender (focus category: male), age (reference: ages 18-25), pay grade (focus category: enlisted), depression (focus category: positive for depression in last 12 months), mental health treatment (positive for mental health treatment in past two years with MHC serving as reference category), alcohol use, relationship satisfaction (focus category: unsatisfied relationship) and children in the home (focus category: no children in the home). These variables were inserted into the model using the Enter method.

The deployment related predictors were length of deployment and combat experiences from deployment. The reference category was 1-6 months of total time deployed since September 11, 2001. The categories inserted into the model were 7-12 months, 13-18 months, 19-24 months and over 24 months. With regards to combat experiences, the reference category was the experience of seeing people killed, wounded or viewing dead bodies. The experiences predicted in the model were discharging a weapon, feeling in great danger of being killed, being wounded, injured, assaulted, or otherwise hurt during deployment, closely inspecting any destroyed military vehicles, and being indirectly exposed to combat (mortars, rockets, small arms, fire). All the variables

inserted were modeled against moderate and severe perpetrated physical IPV with their spouse/partner in the past 12 months. The alpha level was set at .05. The Wald statistic, odds ratios, degrees of freedom, p values, and 95% confidence intervals are presented in Tables 11 and 12.

Results indicated that these variables combined provided a statistically significant model of IPV perpetration by severity level, $-2 \text{ Log Likelihood} = 1554.115$, $\chi^2 (40, N = 1,054) = 262.482$, $p < .000$. The Nagelkerke pseudo R^2 indicated that the model accounted for 26.5% of the total variance in perpetrated violence. The model had a classification rate of 66.8% overall with 77.9% for no abuse, 21.3% for moderate abuse, and 0.9% for severe abuse. The proportional by chance accuracy rate was 46% so this model was about 43% better at predicting group membership than by chance.

Three of the control variables were significant predictors of an increased risk for both moderate and severe perpetrated violence (see Tables 11, 12). Those variables were AUDIT score, not having children in the home, and relationship satisfaction. Airmen that received AFRC services within the previous two years were at increased risk for perpetrating moderate violence only. Airmen that received chaplain services within the past two years were at increased risk for severe violence, but not moderate violence. Age, pay grade, depression, and gender were not significant predictors of either form of violence in this model.

In general, hypothesis four was not supported by the results with a few exceptions (see Tables 11, 12). When demographic variables were held constant, none of the deployment combat experiences were significant predictors of moderate or severe violence. An airmen's total length of deployment was not a significant predictor of

perpetrated violence except for 7-12 months of deployment which was a significant predictor and increased risk for moderate violence only (Wald = 5.088, $df = 1$, $p < .05$, 95% CI = 1.069 – 2.572). Airmen who had been deployed a total of 7-12 months were at 1.66 times greater odds of perpetrating moderate violence than airmen who had been deployed a total of 1-6 months.

PTSD symptoms, as measured by the PC-PTSD, were significant predictors of moderate and severe violence (see Tables 11, 12). When controlling for the demographic variables, length of deployment, and combat deployment experiences, PTSD symptoms increased risk for moderate and severe violence. For every one unit increase PTSD symptoms, airmen were 1.23 times more likely to perpetrate moderate violence (compared to no violence) and 1.438 times more likely to perpetrate severe violence (compared to no violence).

Table 11

Multinomial Logistic Regression Results with Combat Experiences, Length of Deployment, and PTSD as Predictors of Moderate Violence

Model	B	SE-b	Wald	df	Exp (B)	95% CI Exp (B)
Alcohol	.107	.026	17.117	1	1.113***	1.058 – 1.171
PTSD	.207	.085	5.974	1	1.230*	1.042 – 1.452
Gender	.083	.195	.180	1	1.086	.741 – 1.594
Age 26-35	.295	.309	.908	1	.341	.732 – 2.463
Age 36 plus	-.621	.331	3.507	1	.538	.281 – 1.029
Enlisted	-.010	.177	.003	1	.990	.699 – 1.401
Relationship Satisfaction	1.217	.199	37.249	1	3.378***	2.285 – 4.993
No Children in Home	.522	.168	9.711	1	1.686**	1.214 – 2.341
Depressed	.159	.234	.459	1	1.172	.741 – 1.854
Chaplain Services	.370	.205	3.255	1	1.448	.969 – 2.164
AFRC Services	.449	.195	5.270	1	1.566*	1.068 – 2.298
7-12 months Deployment	.506	.224	5.088	1	1.658*	1.069 – 2.572
13-18 months Deployment	.208	.245	.720	1	1.231	.762 – 1.989
19-24 months Deployment	-.099	.288	.119	1	.906	.515 – 1.592
Over 24 months Deployment	.025	.282	.008	1	1.026	.590 – 1.783
Discharge Weapon	.135	.327	.171	1	1.145	.603 – 2.174
Danger of Being Killed	.179	.186	.925	1	1.196	.831 – 1.721
Being Wounded	-.209	.324	.418	1	.811	.430 – 1.530
Destroyed Vehicles	-.231	.235	.964	1	.794	.501 – 1.259
Indirect Combat Exposure	.036	.177	.042	1	1.037	.733 – 1.468

* $p \leq .05$

** $p \leq .01$

*** $p \leq .001$

Table 12

Multinomial Logistic Regression Results with Combat Experiences, Length of Deployment, and PTSD as Predictors of Severe Violence

Model	B	SE-b	Wald	df	Exp (B)	95% CI Exp (B)
Alcohol	.174	.033	27.382	1	1.190***	1.115 – 1.270
PTSD	.363	.111	10.759	1	1.438***	1.157 – 1.786
Gender	-.170	.291	.342	1	.844	.477 – 1.492
Age 26-35	-.003	.435	.000	1	.997	.425 – 2.341
Age 36 plus	-.675	.478	1.992	1	.509	.199 – 1.300
Enlisted	-.036	.283	.016	1	.965	.555 – 1.679
Relationship Satisfaction	1.292	.281	21.159	1	3.639***	2.099 – 6.309
No Children in Home	.708	.254	7.760	1	2.030**	1.234 – 3.341
Depressed	-.059	.377	.031	1	.943	.487 – 1.824
Chaplain Services	1.154	.285	16.447	1	3.172***	1.816 – 5.541
AFRC Services	.247	.288	.736	1	1.281	.728 – 2.254
7-12 months Deployment	.649	.350	3.438	1	1.913	.964 – 3.800
13-18 months Deployment	.181	.400	.204	1	1.198	.541 – 2.627
19-24 months Deployment	.284	.436	.424	1	1.328	.565 – 3.120
Over 24 months Deployment	-.099	.469	.044	1	.906	.361 – 2.270
Discharge Weapon	.153	.517	.088	1	1.166	.423 – 3.210
Danger of Being Killed	-.187	.295	.401	1	.890	.466 – 1.479
Being Wounded	-.325	.459	.501	1	.723	.294 – 1.776
Destroyed Vehicles	.160	.340	.220	1	1.173	.602 – 2.285
Indirect Combat Exposure	-.016	.280	.003	1	.985	.569 – 1.704

* $p \leq .05$

** $p \leq .01$

*** $p \leq .001$

CHAPTER FIVE – DISCUSSION

The purpose of this study was to determine the effect of deployment, combat deployment experiences, length of deployment, and PTSD symptoms on the perpetration of IPV in active duty airmen in the United States Air Force. In this study, contrary to the hypotheses, deployment and combat deployment experiences were not associated with perpetrated IPV. The total length of time an airmen had been deployed was generally not associated with IPV, except for those airmen who had been deployed 7-12 months. As hypothesized, PTSD symptoms were a significant predictor of airmen perpetrating moderate and severe IPV.

This study sought to provide additional evidence as to whether or not deployment alone is a risk factor for service members in perpetrating IPV. Though deployment was not a significant factor, it is a factor that cannot be left alone either. Airmen who had been deployed a total of 7-12 months were at greater risk to perpetrate moderate violence, even when holding other factors constant. This finding was intriguing as this total length of deployment suggests that airmen have been deployed for one extended deployment (as Air Force deployments are generally six months in length) or have been on two deployments. Thus, multiple deployments may have increased the airmen's risk for trauma or, at minimum, produced a stress level in the relationship that could lead to IPV. It is possible that deployment-related strain on a relationship peaks at 7-12 months and are able to be worked through as the time an airmen is deployed increased beyond 12 months.

In general, demographic predictors that are usually significant risk factors for active duty IPV were not significant in this study. Factors such as younger age, male

gender, enlisted status, and depression were associated with IPV but not predictive of IPV when modeled with other factors. The factors that were significant predictors of both moderate and severe IPV for airmen who had and had not deployed were relationship satisfaction (i.e., those that were unhappy in their relationships), alcohol misuse, and not having children in the home.

Alcohol has been implicated as a contributing factor for moderate and severe IPV in other studies of airmen who have deployed (Rabenhorst, et al., 2013). This finding was replicated in this study. While no causal link can be determined from this data, alcohol as a contributing factor to perpetration of violence has been identified in previous community-based studies of airmen (Smith Slep, et al., 2014).

These factors that were significant for both moderate and severe violence in this study may contribute to the theoretical understanding of IPV. An ecological theory of IPV, in which relationship factors, alcohol, and PTSD symptoms all contribute to produce violence in some relationships, is supported by the results of this study and previous studies involving Air Force members (Smith Slep, et al., 2014). Since the ecological theory explains IPV by using micro, meso, and macro spheres of practice, there are prevention and intervention efforts that must be enacted on all three levels as well. The first of these concerns social work practice.

Implications for Practice

There are a few possible implications for social work practice. This study highlights the continued need for ongoing screening in military health settings, especially in primary care. Measures such as the AUDIT-C (a brief, primary care version of the AUDIT) can be administered to virtually every service member during routine visits. As

the problems associated with airmen's drinking increased as measured by the AUDIT, so did risk for perpetrating IPV. The AUDIT will continue to be used in the military health system during more comprehensive substance use disorder assessments. The PC-PTSD also played an important role in this study for determining who was at greater risk for perpetrating IPV. Similar to the AUDIT, every one unit increase on the PC-PTSD increased an airmen's risk for perpetrating moderate and severe violence. The PC-PTSD can provide a quick and effective means of screening airmen who have and have not been deployed to determine presence of trauma that could contribute to IPV.

Another practice implication is that the traditional demographic risk factors of age, gender, and rank were not significant in models where alcohol use and PTSD symptoms were present. While these demographic risk factors still had an association with IPV perpetration, they were not the biggest influencer of risk. Alcohol use and PTSD symptoms represent risk factors for IPV that can be quickly and easily screened for across a vast population accessing military health care. Further, these are risk factors that can actually be changed through prevention and intervention of social workers rather than static risk factors (e.g., age) that are unchangeable.

Finally, since PTSD symptoms were significant predictors of moderate and severe forms of IPV, the need for treatment that addresses PTSD in the context of IPV is critical. Since the Strength-at-Home treatment model has received initial positive outcome findings for treating IPV and PTSD (Taft, et al., 2013), it may be an appropriate for military FAPs to pilot this model in order to further test the efficacy of the model. As FAP providers are able to effectively treat a major contributing factor for IPV (i.e.,

PTSD) and IPV in the same model, providers are able to be efficient and effective with active duty couples experiencing IPV.

Implications for Policy

Similar to the practice implications, policy implications from this study stem around factors that contribute to IPV that can be prevented and treated. If the results of this study found that deployment and combat experiences did indeed predict risk for IPV, there would be little that the Air Force could do to change the frequency or intensity of deployments given military operational needs today. While deployments, or the events that occur on deployments likely cannot change, things that can change are initiatives to prevent IPV and alcohol misuse along with broader screening for trauma which lead to the development of PTSD.

Not only could broader screening for trauma among active duty service members be valuable, but it could also be valuable for those that enlist or commission into the military. Based on previous research of ACEs, individuals with a history of military service had a greater incidence of childhood trauma than those who did not (Blosnich, et al., 2014). Researchers also found that this finding was greatest in the all-volunteer military force that commenced in 1973 compared to those that were drafted into military service (Blosnich, et al., 2014). While most people who experience ACEs live normal lives, those who do have ACEs in their childhood are at greater risk for a host of physical and mental health conditions which can contribute to IPV. Thus, some who come into the military are already at increased risk for IPV due to their trauma history.

By implementing trauma screening procedures upon enlistment or commissioning, military policy makers could identify those individuals who have

experienced ACEs to provide them adequate resources when needed. Care would need to be exercised not to increase stigma to those with ACEs but to encourage positive, help seeking behaviors. Simultaneously, policy makers could collaborate with researchers to understand what resilience factors enable certain service members to serve without experiencing mental illness, substance abuse, or IPV (Blosnich, et al., 2014). These factors and concepts could then be promoted and disseminated to the military force as a whole.

Future Research

Unexpectedly, only a small percentage of airmen actually perpetrated IPV with their spouse or partner in the past year. This holds true even for airmen who had PTSD symptoms or combat experiences while deployed. Future research could understand what prevents active duty couples, even with these significant risk factors, from perpetrating violence towards each other. Conversely, most of the attention by researchers and policy makers will be directed towards active duty couples that do experience IPV, especially those with increased risk.

While combat experiences were not found as significant predictors of IPV by themselves, it could be that combat experiences on deployment may contribute to the development of PTSD symptoms which then leads to perpetration of IPV. Thus, PTSD symptoms may be a moderator in an association between combat experiences and IPV that did not exist alone in this study. This moderated relationship could also be true for length of deployment.

In order to more accurately determine if a more subtle relationship exists between combat experiences and the development of PTSD symptoms, the deployment related

PC-PTSD could be further tested, validated, and checked for reliability. This measure could be used in future versions of the CAS in order to determine the extent to which airmen are returning from deployment with PTSD symptoms related to a deployment. Since CAS data is anonymous, it may provide a more accurate picture of airmen suffering from PTSD symptoms than existing PTSD screening procedures which are not anonymous, but confidential. The existing screening data could be combined with CAS data to provide Air Force leadership with more accurate PTSD prevalence in airmen who have deployed.

Airmen in dissatisfied relationships and those who were seeking help (from Chaplain or AFRC resources) were at greater risk for IPV. It is likely that these distressed couples were not at risk due to receiving services but that their relationships were in distress. Researchers could study what factors lead airmen and their partners to seek services in the first place. Is the relationship quality simply the determining factor or do a greater percentage of airmen prefer Chaplain or AFRC services to remedy distressed relationships also afflicted with alcohol misuse or IPV? This may especially be true given the confidentiality level (i.e., 100% confidentiality) offered by Chaplain services compared to limited confidentiality in a mental health clinic on an Air Force installation.

Limitations

There were a number of limitations to this study. Unlike previous versions of the CAS, the 2013 CAS dataset did not have the race or ethnicity of the airmen included for analysis. Without this important demographic predictor of IPV included in any model of violence prediction, it is difficult to determine if these models are accurate as designed. With race or ethnicity of the airmen included in the model, researchers could have more

confidence in the model's ability to predict violence perpetration across subsamples of airmen in the Air Force. Further, it is possible that race or ethnicity is able to explain more of the variance in violence perpetration and be a necessary variable in order to more accurately classify moderate and severe abuse.

As noted in a previous review of active duty IPV studies, multiple studies have relied on the self-report of violence as the sole source of data (Rodrigues, et al., 2014). This can be problematic as it can introduce bias into the data, especially when the data concerns perpetration of IPV. Perpetrators of IPV will often under-report the frequency or minimize the intensity of their violent acts, even when the data is reported anonymously. A victim report is deemed more reliable than perpetrator report; however, the design of this study and the research questions asked made it necessary to rely on perpetrator reports.

The 2013 CAS dataset asked many items of active duty airmen and their spouses. However, items about combat experiences on deployment and the PC-PTSD were not asked of spouses of active duty members, whether they themselves were serving in any component of the Air Force at the time. Although a spouse report of IPV would have improved the validity of self-report data, the research questions asked in this study were only answered by active duty members.

Some of the items in 2013 CAS were also limiting factors in this study. For example, the items that composed the CAS version of the AUDIT were not exactly similar in wording and scoring to the original AUDIT. This made a direct comparison with the AUDIT not possible. Relationship satisfaction was measured using a single item which has not been validated in previous research studies. The item was similar in

wording to the Dyadic Adjustment Scale measure of overall relationship satisfaction, but the response choices differed. By not having the exact item, drawing conclusions about relationship satisfaction of airmen are difficult and cross-study comparisons with other studies involving active duty service members and IPV were not possible (Fonseca, et al., 2006).

Limitations of the items were present not only in the control variables but also in the variables of interest in the study. The dependent variable used items that were similar to the Conflict Tactics Scale, but the wording and response choices were not the same. Again, comparison to a valid and reliable measure of IPV used in many other studies was not possible. Finally, the 2013 CAS did have a four-item measure, based on the PC-PTSD, intended to measure PTSD symptoms that were the result of incidents that happened while on deployment. This measure had not been found to be empirically validated and, due to the skip nature in the CAS, airmen must have answered positive to at least one symptom on the PC-PTSD screener along with answering that they have been deployed to be given the chance to answer the deployment-related screener. Thus, in order to capture the greater number of airmen suffering with PTSD symptoms and the possible influence they had on IPV, the PC-PTSD was chosen for use in this study. However, future research could further test the deployment PC-PTSD as a reliable and valid measure of deployment-related PTSD symptoms.

A final limitation to this study concerns the limitations of survey data, in general, and the CAS, specifically. In general, survey data is cross-sectional and with this kind of data is not possible to infer causality between variables. Thus, while an airmen's alcohol

use, relationship satisfaction, and PTSD symptoms were predictors of perpetrated IPV in this sample, their role as causes of IPV in active duty airmen cannot be stated.

The CAS data was distributed to thousands of airmen across the Air Force yet it was distributed via an airmen's official military e-mail account. It is possible that, despite Ipsos and the Air Force's assurances that the survey was confidential and anonymous, airmen may have been reluctant to be completely honest as they were taking the survey while at work on an Air Force owned computer. Further, the sensitive nature of the items concerning alcohol use, IPV, child maltreatment, mental health symptoms, and overall satisfaction with the Air Force may have influenced airmen's honest responses to the CAS. Airmen may have been concerned that the data could eventually be known to Air Force leadership and identifiable to them individually. Identifiable data could lead to admission of uniform code of military justice violations which could put their Air Force career in jeopardy.

Related to the limitations of the 2013 CAS data was the omission of any items dealing with same-sex violence. Following the repeal of Don't Ask, Don't Tell in 2011, airmen could serve openly regardless of sexual orientation. The 2013 CAS could have presented an opportunity for the Air Force to obtain any preliminary data on the number of airmen in same-sex relationships as well as the percentage of airmen experiencing IPV in those relationships. Future iterations of the CAS should address this issue.

Conclusion

This study has made an important contribution to understanding the impact of unique military service factors, such as deployments and combat experiences, on IPV in active duty airmen. Social workers that are working with military couples can use these

findings to apply in their practice by acknowledging the variety of micro, meso, and macro factors that can influence a couple's risk for IPV. Finally, military program directors and policy makers can continue to focus limited resources into effective prevention and treatment of IPV with a focus on relationship quality, alcohol, and trauma.

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CURRICULUM VITAE
STEVEN MATTHEW HYER

EDUCATION

Indiana University Indianapolis, IN Major: Social Work Minor: Sociology	Ph.D.	Sep 2017
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Brigham Young University Provo, UT Major: Social Work	MSW	Apr 2010
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Brigham Young University Provo, UT Major: Psychology	BS	Aug 2008
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Salt Lake Community College Salt Lake City, UT Major: General Studies	AS	Dec 2006
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FELLOWSHIPS

Air Force Institute of Technology Civilian Institution Program	Ph.D. Social Work	Dec 2013
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LICENSURE

State of Utah	Licensed Clinical Social Worker	Jun 2013-Present
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State of Utah	Certified Social Worker	May 2010-Jun 2013
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SPECIALITY BOARDS

National Association of Social Workers	Diplomate in Clinical Social Work	May 2016-Present
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American Board of Examiners in Clinical Social Work	Board Certified Diplomate	Aug 2015-Aug 2016
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**PROFESSIONAL
ORGANIZATION
MEMBERSHIPS**

National Association of Social Workers	Member	2008-Present
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Association of Mormon Counselors and Psychotherapists	Member	2008-2010
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**PROFESSIONAL
HONORS/AWARDS**

366 th Medical Operations Squadron Mountain Home AFB, ID	Company Grade Officer of the Quarter	Mar 2012
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Brigham Young University Department of Social Work	Ariel S. Balif Graduate Social Work Award	Apr 2010
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**PROFESSIONAL
DEVELOPMENT**

Gottman Method Couples Therapy The Gottman Institute	Treating Affairs and Trauma	Nov 2016
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Gottman Method Couples Therapy The Gottman Institute	Couples and Addiction Recovery	Nov 2016
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Gottman Method Couples Therapy The Gottman Institute	Level II: Assessment, Intervention, & Comorbidities	Jun 2015
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Gottman Method Couples Therapy The Gottman Institute	Level I: Bridging the Couples Chasm	Apr 2015
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Center for Deployment Psychology	Prolonged Exposure for PTSD	Feb 2011
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Candice Monson, Ph.D.	Cognitive Behavioral Couples Therapy for PTSD	Jan 2011
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Center for Deployment Cognitive Processing Psychology	Therapy for PTSD	Oct 2010
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RESEARCH

Hyer, S. M. & Lay, K. A. (2017, January). Officer first, social worker second: A case study of uniformed military social workers. Poster presentation at 21st Annual Conference of the Society for Social Work and Research (SSWR), New Orleans, LA.

Hyer, S. M. (2016, September). Intimate partner violence in active duty service members: How effective are the intervention models? *4th Annual Military Social Work Conference*, Austin, TX.

Cocco, J.P. & **Hyer, S.M.** (2016, May). Hidden trauma: Barriers to understanding sexual behaviors in prison. Poster presentation at *The 20th Annual PhD Research Symposium*, IUSSW, Indianapolis, IN.

Hyer, S.M. (2015, May). Intimate partner violence in the military: A call for evidence-based practice guidelines. Poster presentation at *The 19th Annual Ph.D. Symposium*, IUSSW, Indianapolis, IN.

TEACHING

Indiana University School of Military Children and Social Work	Invited MSW Course Lecture	Nov 2015
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Indiana University School of Military Families and Child Social Work	Invited MSW Course Lecture	Nov 2014
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Brigham Young University	Teaching Assistant (Lecture Course) PSYCH 304: Psychological Testing	Jun-Jul 2008
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CLINICAL PRACTICE

United States Air Force Mountain Home AFB, ID	Family Advocacy Officer	Sep 2011-Jul 2014
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United States Air Force Andrews AFB, MD	Clinical Social Worker	Oct 2010-Aug 2010
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LDS Family Services Provo, UT	Clinical Social Work Intern	Sep 2009-Jul 2010
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Cirque Lodge Orem, UT	Clinical Social Work Intern	May 2009-Aug 2009
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SERVICE

The Church of Jesus Christ of Latter-day Saints	Early Morning Seminary Instructor 9 th & 10 th grade students	Aug 2015-May 2017
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YMCA Fishers, IN	Youth Sports Coach	Jan-Feb 2015
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Boy Scouts of America Mountain Home, ID	Merit Badge Counselor	May-Aug 2013
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Parks and Recreation Mountain Home, ID	Youth Sports Coach	Oct 2012-Apr 2013
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